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GATX:

A History of the General American Transportation Corporation

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A History of the General American Transportation Corporation

1898-1948

by

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New York
NORTH RIVER PRESS
1948

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Printed in the United States of America

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PREFACE

THE writer of an authorized history or biography usually possesses some admiration for his subject. Whether the subject be an institution or a person, the tendency is to stress its virtues and minimize its faults. In this instance, the author's point of view gains especial color because he happens to be related to several officers in the company; and although he has tried not to let this interfere with the presentation of facts and figures, it is proper that the circumstance be pointed out. Perhaps the paraphrase of an old saw is here not out of place: God gave me my relatives, but the reader may choose his own interpretations.

The company has afforded me freedom of investigation and access to materials that I desired to excavate. I am indebted to so many persons for their cooperation that it seems invidious to mention only certain names; but in particular I wish to express thanks to Max Epstein, Lester N. Selig, Sam Laud, Bennett Epstein, Arthur A. Selonke, David Copland, LeRoy Kramer and Robin Douglas.

RALPH C. EPSTEIN

Buffalo, New York

PROLOGUE

"WE have commenced in a small way. If a large tree grows from this small seed, we shall be grateful. . . . We are determined that it shall not fail through indolence or extravagance. . . . We shall strive to do the work that lies nearest us in the best manner we can." Thus wrote Daniel Macmillan in 1843, upon establishing the London publishing firm of Macmillan and Company in London. So equally might Max Epstein have written 55 years later in Chicago.

The Atlantic Seaboard Despatch, a railroad refrigerator car line established by Epstein in 1898, was indeed a small seed. In that year its cash was zero; its own net capital amounted to $1,000 and it had 28 cars. Today (in 1948) the General American Transportation Corporation's latest balance sheet shows cash of about $11,000,000; its stockholders' capital exceeds $85,000,000; and it owns and operates about 55,000 refrigerator, tank and other freight cars. Besides leasing equipment, the company manufactures railroad cars, motor coaches, special steel plate fabrications, plastic products and various kinds of industrial process equipment. Its assets amount to more than $130,000,000. The small seed has indeed become a large tree, with roots that run deep and branches that spread wide.

Underlying the development of every large business are two sets of factors. One is an opportunity—the chance to sell a product or service at a profit. The other is the manner in which management takes advantage of the opportunity. This involves the way in which those responsible for the direction of the business habitually deal with customers, with bankers, with suppliers, with subordinates, with labor and with Government; and, of course, with shareholders.

Both factors are always needed: the main chance and its skilful embrace. Anyone with imagination can sense the initial opportunity if he happens to run across it; only those with imagination plus judgment and certain standards and habits of business behavior can follow through and, over a quarter or half century, consistently cultivate the opportunity so as to induce a vigorous and steady growth.

In other words, the profitable administration of a business depends partly on luck and partly on the exercise of certain principles. Charles Morgan, in telling of the enterprise founded by Macmillan, of its conspicuously successful affiliated house in New York, and of its branches spread over the world, declares that since

> . . . such things do not happen by chance, it would appear that a policy of some kind, a principle or character, has borne fruit, and it will be of interest to discover . . . what that policy has been in relation to the trade . . . to the art . . . and to the changing times.

So, in the following pages, are set forth the principles on which, at times despite which, General American has grown and prospered. This book is a business history, not a biography. But business is always carried on by men; and for this reason, frequent reference to personalities is both incidental and deliberate. No effort, however, is made to idealize the men or the corporation. The company's founder and other executives have made mistakes. These executives throughout the years, like those of less successful firms, have been human, which is to say fallible. The effort we make here is to chronicle the development and to analyze the present status of the business, not just to praise it. How and why has the tree grown? How has the character of its soil changed? What are its scions and what its fruit? What limbs have been pruned off, where do its branches spread and what are the directions of their present growth? This is what we have to tell, this is the story of General American.

CHAPTER I

A GENERAL PICTURE

1. *The Atlantic Seaboard Despatch*

IN 1898, the Duquesne Brewing Company of Pittsburgh sought to purchase 20 second-hand railroad refrigerator cars. A young man named Max Epstein, employed by a provision company in the Chicago Stockyards, heard of this through a friend. Epstein called on the superintendent of a refrigerator car line operated by a firm of meat packers in the Yards. It appeared that they had 48 old cars which were going to be dismantled. They agreed to sell them for $400 each, out of which a $50 commission would be paid to the sales agent.

The young man thereupon became a promoter and a planner. He wrote the Duquesne people and described the cars, which they agreed to inspect. During the several weeks that elapsed before their representatives could come to Chicago, Epstein pondered two matters more or less continuously. One was the fact that $50 multiplied by 20 equalled $1,000. The other was whether or not he could succeed in making the sale.

Much has been written in recent years about the alleged principles of salesmanship. "High pressure selling," in today's parlance, is supposed to involve numerous factors; among them are selected samples of oratory and the exudation of great energy by the salesman. Young Max's merchandising credo embraced no such elements. His plan was simple. If people do not dislike you, he reasoned, if they feel friendly and have confidence in you, and above all if you can legitimately appeal to their vanity, what you offer will sell itself. Let the rest of the story be told in his own words:

> The Duquesne people were to come to Chicago several weeks later. I kept their letter in my pocket and read it frequently. One day I got a hunch. The letterhead was a very colorful affair, many colors crossing each other, with a big "D" for the name, and I got the idea that those people were vain and that if they could see all this on a car it would be impressive to them.
>
> So I asked the packing house people to paint a car exactly like the letterhead. Eventually these brewers came to Chicago. The car was cleaned, painted and set aside. I took them to the Stockyards through the entrance where I knew they would see the car from a distance. We walked along and finally one of them said to the other: "There is our name on a billboard." Of course that was what it looked like. They liked it and it was a very easy sale.

The Stockyards concern then asked Epstein if he could sell the remaining 28 cars for them. He tried without success:

> On inquiry I found that others who could have used them did not have the necessary cash to purchase or were not of the size to operate their own car fleet. That created the idea of renting refrigerator cars. But I did not have any money to buy them. So I sought an interview with the head of the packing company's car line and told him that I had a purchaser for the twenty-eight cars. He was delighted. "But," I said, "my man cannot pay cash but will pay a little down." He said, "I don't know. Is he good?" "Very good." "How much will he pay down?" "Just a nominal amount—about $1,000. He will give a mortgage for the rest." He pressed me as to who the party was, and I told him it was myself. So they agreed to sell the cars to me. They then asked about the $1,000 cash payment. I said, "You have it already in the commission on the other twenty cars."

The new refrigerator car line was called the Atlantic Seaboard Despatch. It was owned as an individual proprietorship by Epstein, who for several years retained his position with the provision company while he operated the line. Shortly afterward, five second-hand tank cars were acquired and leased to meat packers for the shipment of lard. The fleet then boasted a total of 33 cars: 28 were refrigerators and 5 were tanks.

2. *The 1902 Incorporation*

After about three years of successful operation, during which the Atlantic Seaboard Despatch put all of its net profits back into the business, it was decided to incorporate the enterprise. In 1902, a West Virginia company was formed to own and operate the line. The corporation's name was changed in 1916 and another company, to hold its stock, was incorporated in New York. Throughout the years, however, the business has continued under the same management, and the initials of its principal car fleets have always been GATX.[1] For simplicity, therefore, we shall refer throughout to the original company started in 1902, to that incorporated in 1916, and to the present General American Transportation Corporation merely as "General American."[2] The corporate relationship between the West Virginia and New York companies will be described later.

Capitalization of the company, in 1902, was $50,000. There were 500 shares with a par value of $100 each. At a directors' meeting on March 12 in that year, a resolution was offered to increase this to 1,000 shares, but conservatism prevailed and the motion was voted down.

The second directors' meeting was held on April 22, 1902. Three actions taken that day may be remarked. First, the man who had been the original employee of the Atlantic Seaboard Despatch, David Copland, was appointed Superintendent. Then, upon motion, "Salaries of the officers were waived for the time being." Finally, an acquisition of great significance was recorded:

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[1] The letter "X" means merely that a car belongs to a private line; i.e., is not owned by a railroad.

[2] Actually the company, in 1902, was called German-American Car Company; in 1916, General American Tank Car Corporation; and in 1933, General American Transportation Corporation. The original name had no meaning; it merely copied part of the name of the German-American Provision Company, the packing firm in Chicago.

> Mr. Max Epstein thereupon offered to sell to the corporation the entire assets of the Atlantic Seaboard Line, consisting of twenty-seven refrigerator cars[3] and the good-will of the business theretofore carried on by him under said name, together with five (5) tank cars, in full payment of the entire capital stock of this corporation.
>
> Mr. Epstein represented that the manner in which he had conducted the business made the good-will very valuable, and that he had no doubt that the company would earn $15,000 a year.

Following that rash statement, the board voted that Mr. Epstein's offer "be accepted and that the entire capital stock of the company be issued to him as full paid." From that date until 1916, he was the principal owner of the company.

Furthermore, between 1902 and 1916, not one dollar of new money was put into the business. The stockholders' equity of $3,750,000 in April, 1916, had been built up entirely by the reinvestment or "ploughing back" of profits. Except for the original $1,000 commission left by Max Epstein with the Stockyards concern as down payment on the first cars, the capital of General American in 1916, just before the first public offering of stock was made, consisted entirely of undistributed earnings. This fact suggests some interesting and perhaps important sidelights upon recent and future taxation policies.

3. *Position and Prospects, 1903–06*

By the end of 1903, the company's fleet had grown to 131 cars. Its gross income for the year was $14,851.

By 1906, the fleet had grown to about 300 cars and business volume to about $87,000. While no reliable statistics on total tank and private freight car ownership for the entire country exist for 1906, it is clear that General American was still a comparative infant; it owned a very small percentage of all the tank cars in the United States.

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[3] One of the 28 original refrigerator cars acquired from the Stockyards line had apparently worn out and been scrapped.

In 1903–04, however, it pioneered in two important respects. It was the first private car company to use the so-called Philadelphia plan of financing its fixed capital needs through the issue of equipment trust certificates. It probably also was the first tank car company to put steel underframe cars into service. Prior to 1904, although the tanks themselves had been made of steel, the underframes had been of wood. In that year, General American ordered 100 cars from the Standard Steel Car Company of Butler, Pennsylvania. The purchase price was $975 per car. This $97,500 investment was financed by the issue of equipment trust certificates.

4. *First Decade of Manufacturing*

The company's first "shop" consisted merely of a small piece of railroad trackage in Chicago, at Racine Avenue and West 45th Street. This headquarters was used for repairing and servicing the company's small fleet of cars. The track could accommodate four cars at a time.

Oscar Carlstrom and five other men constituted the repair crew. Carlstrom, who was 81 years old in 1947 and is still in the company's employ, recalls that he began work a few days before Christmas in 1898, that he received 27½ cents per hour, and that the foreman's name was William Knorr. He likewise says that Mr. Epstein came over every morning between seven and eight o'clock to inspect the "shop" and observe the progress of the work.

In 1907, these repair and maintenance activities were moved to East Chicago, Indiana, some sixteen miles to the southeast. The company by this time had about 400 cars in its fleet and needed larger maintenance facilities. It also desired to assemble new cars both for its own use and for sale to others. An arrangement accordingly was made with the Graver Tank and Boiler Works, which manufactured stationary boiler tanks in an East Chicago plant, to lease trackage in its yard, adjacent to the boiler factory. The capitalization of the company in 1907 was less than $300,000. Its assets consisted chiefly of tank cars. It owned no manufacturing and little repair equipment. "We always had to locate near some one else's plant," says Wilfred Hennig, an early employee and now superintendent of one of General American's shops, "because we had to be able to borrow tools."

A small shed was erected in the Graver yard in 1907, and General American then made or, more accurately, assembled its first car. The trucks, bolsters, gear and fittings were purchased from parts suppliers, while Graver made the tank. A photograph of this first car is shown on page 134. From this time on, however, the needs of the company's own fleet were met by its own manufacture of equipment. Excepting for equipment acquired when other lines were purchased, no additional tank cars were ever bought outside.

In 1910, the arrangement with Graver was seen to be outgrown, and a five acre piece of land several miles away, in the Calumet district of East Chicago, was purchased. Gradually improved and enlarged, this Euclid Avenue property formed the nucleus of the company's present great car manufacturing plant in East Chicago. From an output of one and two tank cars a day in the shop behind Graver's, production grew to 15 and 20 cars a day in the new shop by 1920.

In 1912, an adjacent five acres were purchased. Today (in 1947), this car plant in East Chicago comprises 114 acres; this property is known as East Chicago Plant #1. Another large property, East Chicago Plant #2, located about 1½ miles to the west, covers 39 acres and is devoted entirely to tank car repair work.

In the same year that assembly and manufacturing activities were begun at East Chicago, developments also were initiated at Warren, Ohio. An arrangement similar to the one established with Graver was made with the Warren City Tank and Boiler Works. A small car shop was created next to that plant, for both repair and manufacturing purposes. In 1910, Fred Klippert, a Pennsylvania Railroad inspector and car supervisor, was brought to this Warren shop as foreman. Klippert, in 1947 a hale and hearty man of 72, is now among the company's oldest employees.

He is now superintendent of the company's tank car plant at Sharon, Pennsylvania, of which the Warren, Ohio, plant was a direct predecessor.

In 1927, tank car manufacture at East Chicago was transferred to the new Sharon plant, which thus assumed the *tank* manufacturing functions of both East Chicago and Warren. East Chicago's manufacturing activities are now concentrated upon other types of cars: refrigerators, hoppers, box cars, etc. East Chicago Plant #2 still repairs and rebuilds tanks, but all *new* tank cars are built at Sharon.

The Sharon shop likewise repairs tanks, as do the company's other repair shops at Middlesex (New Jersey), Argentine (Kansas), Franklin (Pennsylvania), Houston (Texas) and elsewhere; the complete list appears on pages 114–15.

The early growth of the East Chicago and Warren facilities can be seen in the numbers of tank cars for which orders were booked, in selected years, during the first decade of operation:

	EAST CHICAGO	WARREN
1907	145	159
1915	454	1,252
1916	3,489	3,521

5. *The 1916 Incorporation*

By the end of 1915, General American gave evidence that it was destined to become a large enterprise. It owned and operated about 2,300 cars, and was also selling about 1,700 cars a year. These combined rental and manufacturing operations resulted in a gross volume of nearly $3 million in 1915.

Its net worth in 1915 was more than $1,600,000. All of this had come out of earnings since 1903, excepting for the original one thousand dollars with which the company had been started. In 1914, net profits were 20 per cent on net worth, in 1915 about 26 per cent. With the business growing by leaps and bounds, it seemed wise to expand by going to the public for the first time, in order to increase capital faster than through the process of reinvesting profits.

In floating a stock issue in June, 1916, the company could point to a nearly 20-year-old history and to substantial technical as well as financial achievement. It had pioneered in a car leasing program that offered to shippers the more flexible service provided by a privately owned fleet. It had put into service the first steel underframe cars. In 1910 it had designed and leased the first insulated cars for the shipment of wine and, several years later, the first insulated tanks for the shipment of that highly inflammable product, casinghead gasoline. It had begun negotiations for the building of high-pressure tank cars, intended for the shipment of chlorine, which resulted in an order for such a car in August, 1916. This equipment was the forerunner of specially constructed and designed cars of all types to be built later for the transportation of a great variety of liquids and gases.

Finally and not least important, in seeking funds for expansion the company could point to a successful and conservative record of previous financing and management. Between 1908, when it first paid dividends to its small group of stockholders, and the end of 1916, when for the first time it offered its stock to the public, the company had earned profits in every year; but it had always paid out far less than it earned. The following figures, for the five years immediately preceding 1916, illustrate this conservatism:

YEAR	NET PROFIT	CASH DIVIDENDS	% PAID OUT
1911....	$154,347	$35,000	23
1912....	241,136	49,000	20
1913....	287,845	71,000	25
1914....	260,987	70,000	27
1915....	441,370	70,000	16

There was, therefore, no difficulty in floating the new stock issue. A New York corporation, called General American Tank Car Corporation, was formed on July 5, 1916, to acquire all existing stock of the West Virginia Company that had been operating since 1902. Capitalization of the new parent company was authorized as follows:

$2,500,000 Cumulative 7% First Preferred
$1,000,000 Cumulative 7% Second Preferred
50,000 shares of no-par Common

This was the first public offering of any stock in General American. A syndicate headed by Charles D. Barney and Company undertook to dispose of the new securities. The first preferred stock was sold to the bankers at 97½ and by them to investors at $100 per share; with each share was given one-quarter share of the common. The second preferred was taken by Max Epstein and other original holders and later was converted into common shares.

From the proceeds, the company realized $2,437,500 in cash, the bulk of which was soon used for plant expansion and for additional cars that were added to the fleet. As a result of the proceeds of the new financing, plus about $1,000,000 in earnings during the year, the company's net worth jumped from around $1,600,000 at the beginning of 1916 to about $4,360,000 at the end of the year.

While both gross and net earnings continued to increase during the three years immediately following, dividends were not paid on the common stock until 1919 because of rigid provisions in the preferred stock agreement for a sinking fund accumulation.

6. *The First World War*

When hostilities broke out in Europe in 1914, and especially after the United States entered the war in 1917, the demand for railroad equipment grew apace. Some measure of the expansion which took place in General American's operations during these war years may be seen in a comparison of the gross volume of business done in 1916 and in 1918. Volume for 1916 was about six million dollars; for 1918 it was nearly 20 millions. Chart 1 presents four measures of the company's growth, in selected years after as well as before 1916.[4]

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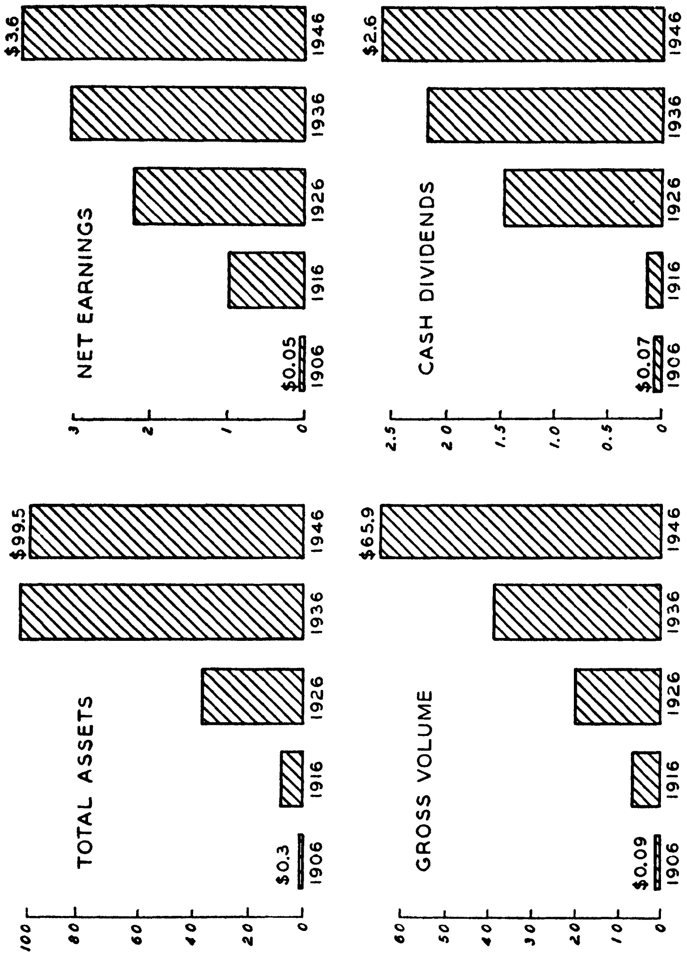
[4] The data underlying this and all other charts may be found in the Appendix.

CHART I

FOUR MEASURES OF GROWTH, 1906-1946

MILLIONS OF DOLLARS



Physically and geographically, the East Chicago plant underwent great transformations. In 1916, the "big tank shop" was put up; this was the first building of modern steel construction that General American owned. It is now used for the manufacture of freight cars—refrigerator, hopper, box and gondola. In the four years 1916–19, a total of about 12,000 tank cars was built in the East Chicago plant.

At Warren, less startling changes in buildings and layout took place. In the three years 1916–18, however, nearly 8,000 tank cars were built as against a total of 3,000 in 1913–15.

War prosperity continued in 1919 and through a part of 1920; then came the deluge. The general business crisis experienced throughout the country after the spring and summer of 1920, and the ensuing depression of 1921–22, affected the heavy industries with especial severity, and railroad car building was no exception. *But the stabilizing influence of the original backbone of the business—the revenue from services—prevented total volume from declining in such sharp proportion as did manufacturing output.* This important principle, namely that service revenue from rentals acts as a sort of anchor in time of storm, accounts for much of General American's financial success. Chart 2 indicates that this has been true in later periods also.

Net profits were impaired in the 1920–21 depression, but to a much lesser degree than gross volume. Earnings after taxes in 1920 had been $1.7 millions; in 1921 they were less than $1.2 millions. Yet despite the unfavorable fluctuations in both volume and net earnings, dividends were paid in both years; in fact, about $750,000 of cash dividends were declared in 1921 as against about $600,000 in 1920. Although the point will be discussed later, it may here be remarked that ever since the first cash payment to common shareholders in 1919, General American has in every year paid a dividend on its common stock, whether the year has been one of prosperity or depression.

7. *Expansion During the Twenties*

Recovery from the 1921–22 depression was well under way by 1923. The company's total gross income reached a new high of $25 millions. Four-fifths of this came from manufacturing operations. Together, the East Chicago and the Warren plants sold $16 million worth of new cars, and in addition made two million dollars' worth of equipment for General American's own fleets. Car repairs and parts accounted for another two million dollars of sales.

Between 1924 and 1930, however, no further great expansion of car manufacturing volume took place. Chart 2 shows the fluctuations that occurred; the year 1930 stood at about the same level as 1924, with about 22 million dollars' worth of manufactured products.

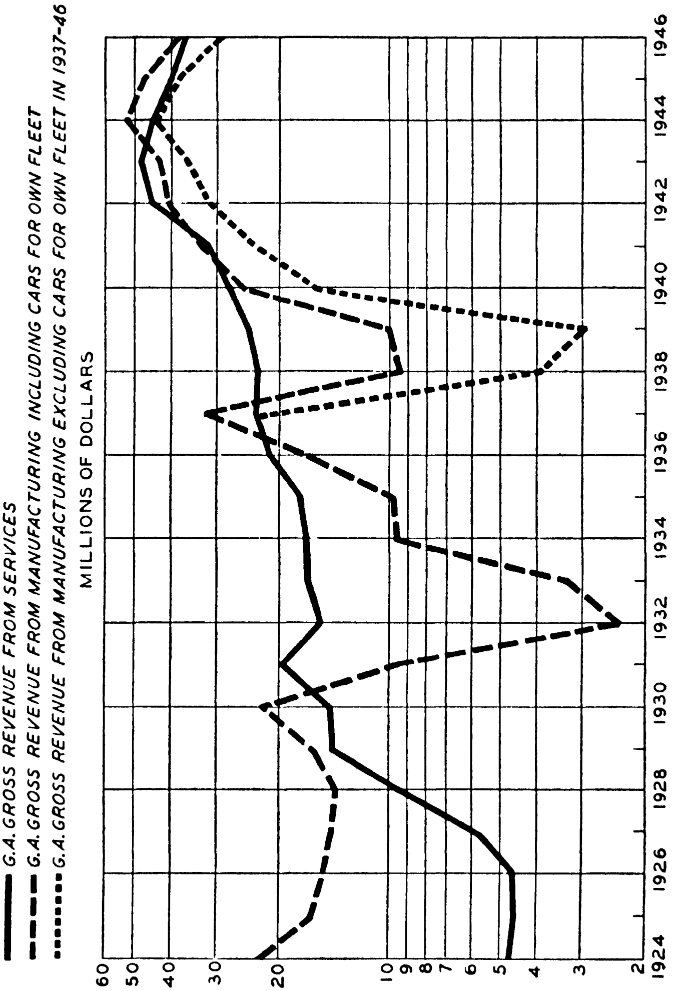
The years 1924–25, in fact, seem to mark the coming to maturity of the company's East Chicago manufacturing facilities. Under the aegis of LeRoy Kramer, vice-president in charge of manufacturing, wood car production—refrigerator and box cars—had been successfully developed. Tank car production had not yet been entirely transferred to Warren and Sharon; so in early 1924, East Chicago was extremely active in tank as well as wood car fabrication. On a single day (April 8), 76 new tank cars were rolled off the production tracks, and 93 wood cars were also shipped. This was exceptional; it is thought to be a shipment record for any freight car building shop. These cars were not, of course, "built" in one day; only the final assembly and inspection operations on them were performed. Even so, the shipment record—getting that many cars "out"—was impressive and caused great excitement on Euclid Avenue.

In the car leasing field, the company's business expanded enormously during the latter half of the twenties. General American not only built new cars for its own fleets, but augmented them through the purchase of other lines. Shortly after the first world war, it purchased the Federal Tank Line of Pittsburgh, with more than 1,000 cars. Soon afterward, it acquired an Oklahoma oil fleet previously known as the Constantine Tank Line. In 1928, the Standard Tank Line and the Quaker City Tank Line were purchased, and the following year the Liquids Despatch Line was bought, its cars rehabilitated and added to the General American fleet. These were chiefly tank car lines. In 1929, how-

CHART 2

GROSS INCOME FROM SERVICES AND MANUFACTURING

(RATIO SCALE)



ever, a major non-tank car acquisition was made—the Union Refrigerator Transit Company of Wisconsin became an operating subsidiary of General American. This brought some 5,000 refrigerator cars into the General American refrigerator fleet and approximately doubled its size. The combined effect of new cars built for its fleet and other acquisitions gave the company a total of 32,394 cars at the end of 1929 as against 10,806 cars of all types operated at the beginning of 1920. Chart 3 depicts this growth.

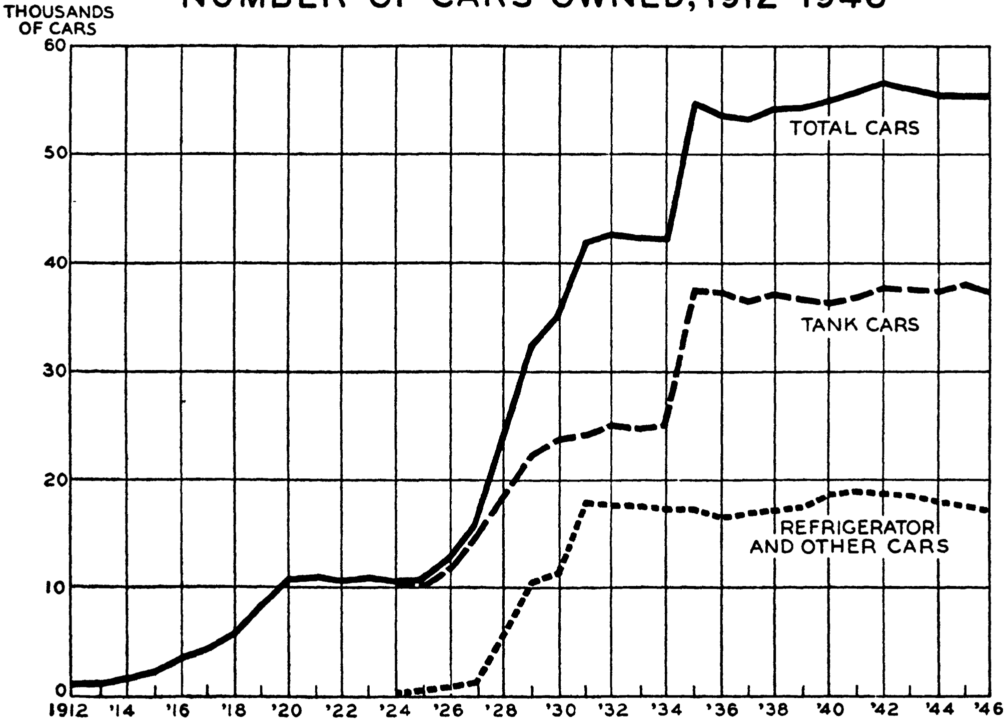
At the end of the 1920's the company that started business in 1898 with an investment of $1,000, and that had a stockholders' capital of only a million and a half early in 1916, had become the leader in its field and was well established as one of America's large corporations. At the end of the 'twenties it was not a "giant" in terms of size, nor is it now; a large number of steel, automotive, chemical, and food companies still far surpass it in sheer magnitude of assets; so also do many utilities and railroads. Nor was the company, at the end of the 'twenties, at the head of the list in terms of earnings; numerous automotive and chemical companies far exceeded its rate of profit on investment. Nevertheless, an original General American stockholder, by 1929, had the satisfaction of having been an owner in an enterprise that had grown steadily, paid dividends regularly, and under conservative management had come to be regarded as a "gilt-edge" enterprise. Its securities enjoyed high repute among bankers and others who habitually analyzed financial statements, and its equipment trust issues were so well regarded that, even in the early 'twenties, concerns like the Metropolitan Life Insurance Company bought them for their own portfolios. Chart 4 shows how much more stabilized is General American's income than that of most industrial companies.

8. *Diversification of Activities*

The latter part of the 'twenties saw a great growth of business volume, but the expansion was chiefly in directions already begun: car leasing and car manufacturing. Except for the establish-

CHART 3

NUMBER OF CARS OWNED, 1912-1946



ment of storage terminals (discussed below in Chapter V) and the reintroduction of refrigerator car operation, no significant new lines of activity were undertaken. In the nineteen-thirties, however, the beginnings of a policy of diversified activities were to be seen. Chart 5, presented later in this chapter, shows the resulting developments. In it are graphically reflected the establishment of not only a storage terminals division, but of a motor bus factory (the Aerocoach division), a plate and welded products plant, an industrial process equipment division, plastics manufacturing operations, and ancillary activities. Only one or two of these newer divisions will be commented upon here, since they are all discussed in later chapters.

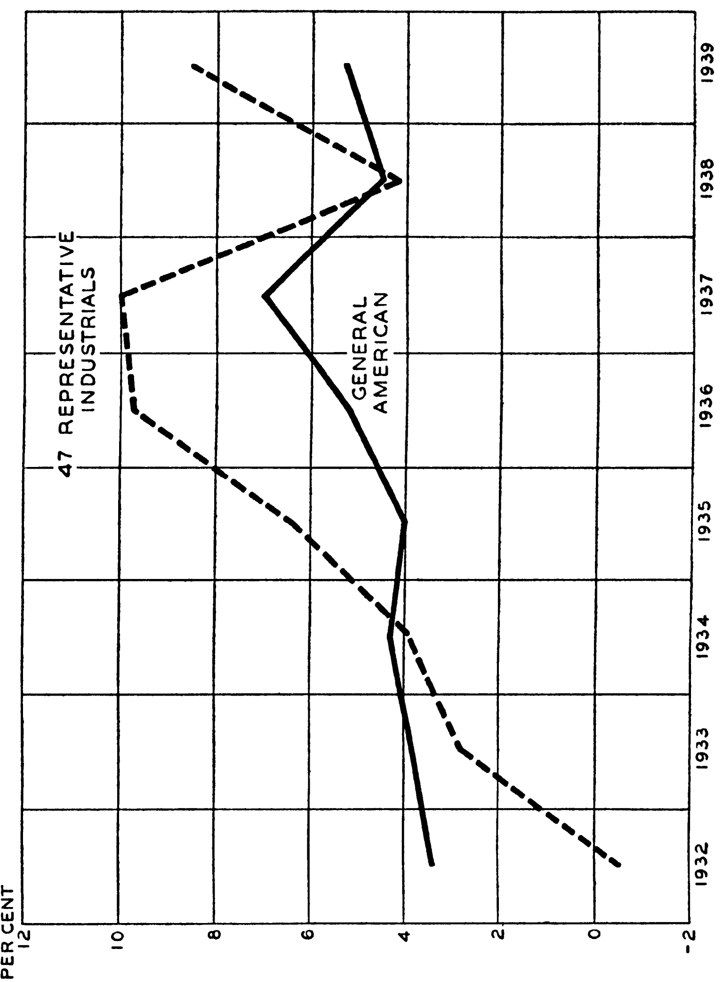
Steel and alloy plate and welding activities were seen naturally to complement the corporation's other lines of endeavor. The standard tank car is built of riveted steel members—plates that are rolled, punched, caulked and riveted together to form a cylindrical tank. In the development of special cars for certain chemical and other uses, however, it was found that a welded tank was superior to a riveted one. Gases do not escape through the joints, and maintenance is less. Since 1916, therefore, General American has used welded tanks for many of its cars. In 1940, it had opportunity to acquire a plant at Sharon which was equipped for various kinds of plate and welding work. This property, now known as Sharon Plant #2, was purchased from the Petroleum Iron Works. It adjoins Sharon Plant #1 (the main tank car plant).

The second Sharon plant makes welded tanks and vessels of various kinds, not merely for tank cars but for numerous other purposes. Smokestacks and huge chimneys for various industries, oil well equipment, and Wiggins "floating roofs" (vapor-sealed tops for stationary volatile gas storage tanks) are all made at Sharon's Plant #2 and are engineered to fit the ever-developing needs of a wide variety of extractive and manufacturing industries in the United States, Canada and abroad. These specialized steel fabricating activities constitute the General American Plate and Welding Division.

The plant facilities developed for this division resulted in

CHART 4

NET INCOME EARNED ON STOCKHOLDERS' CAPITAL



General American's obtaining capacity for the production of industrial machinery of various types as well as for steel plate fabrications. In pursuance, therefore, of a policy of diversification and interrelation of products, the corporation, after careful study of opportunities existing in the industrial machinery field, in 1943 acquired four already existing companies and amalgamated them into a new General American Process Equipment Division. These four organizations were the Louisville Drying Machinery Company, the Turbo-Mixer Corporation, the American Machine Company and a sales engineering group known as the Conkey Filter Company. The Louisville company was acquired by the purchase of stock from its owner, Arthur Lissauer of Louisville, Kentucky. The Turbo-Mixer Corporation was likewise bought by a purchase of stock. In the case of the American Machine Company, only its name, designs, engineering drawings and patents were taken over. The Conkey organization had been a partnership, and its partners became employees of General American.

The resources and activities of these four companies are now unified in the Process Equipment Division. The Division designs, engineers, manufactures and sells four broad classes of industrial equipment for use in the processing operations of the brewing, canning, chemical, food, mining and numerous other industries. Broadly speaking, the four classes of machinery which the Division makes are: mixers and thickeners; rotary dryers, drum dryers; filters and evaporators.[5] The Division's service is conducted in conjunction with the corporation's research laboratories at East Chicago and the general engineering office at Chicago; its engineering development and sales offices are in New York.[6] General American now produces more than three million dollars' worth of process equipment anually.[7] Its activities in dozens of industrial fields serve not only to augment General American's income, but greatly to extend the scope of the corporation's usefulness to many customers, among them firms that normally lease and purchase tank cars, hopper cars and other freight cars from the company. To the chemical, mining, food and other industries, General American can supply a far more complete line of industrial products and services; i.e., it now offers industrial equipment as well as transportation and storage facilities.

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[5] These several types of equipment are described in Chapter IV.

[6] A small sales office, for dryers, is also maintained in Louisville, Kentucky.

[7] This is the figure for 1947; the chart in this chapter, showing a smaller process equipment sales figure, pertains to 1946.

9. *Labor and Personnel Policies*

Balance sheets and income accounts, production and sales figures, rolling stock and plant investment—all may be coldly stated as statistics, but it must never be forgotten that they come about through men. It is the human element in management that distinguishes the far-sighted from the short-sighted enterprise. The company's treatment of customers determines how much business it will obtain; but its relationship with employees governs its success in supplying customers with goods and services, and in maintaining standards of quality, performance and reputation.

In its record of employee relationships General American has a long and rather successful history. Until 1937, its workers had never organized. The Congress of Industrial Organizations in that year sent organizers to East Chicago. To the C.I.O.'s surprise, the General American management did not oppose the move but at once offered to sign a contract. This basic agreement was executed in March, 1937. Other plants of the company are now similarly unionized.

Employees in all plants have entire freedom of expression with respect to working conditions and to the treatment of fellow-workers. At East Chicago, for example, regular meetings are held twice each month between 9 elected representatives of the local union and 6 plant officials. Grievances here are aired, differences adjusted. The labor relations record is good. No strike has ever been called affecting the East Chicago shops, except for the C.I.O. Steelworkers strike (which was country-wide) in 1946, and apart from a brief jurisdictional dispute between rival unions in 1944.

In attempting to promote the general welfare of employees, the company's principal contributions have been three: the group insurance plans, the pension plan, and the college scholarship plan.

The group life insurance plan affords from $1,000 to $10,000 coverage for different classes of employees at a monthly cost, to the worker, of 60 to 75 cents per $1,000 of insurance. Since the total premium paid by General American to the insurance company is $1.51, the corporation defrays more than half of the total expense. Accident and health insurance policies and hospitalization and surgical benefits are also available to employees at less than cost.

The retirement plan was inaugurated in 1935. Its operation affects various classes of workers in different ways, depending on their earnings and length of service with the company. As one illustration, we may take the case of a male employee 38 years of age who joined the plan on its effective date in 1935 and who had been with the company for 10 years at that time. If he was then earning and has since continued to earn $2,200 per year, he will be able, by his contribution of $1.70 per month plus the operation of the Social Security Act benefits, to retire at age 65 with a life income of $96.53 per month. As retirement income he will, in other words, receive slightly more than half his previous earnings.

This result is made possible for older employees only because the company has contributed heavily to the retirement fund in order to supplement the employees' savings. When the plan was adopted in 1935, the company paid, to the insurance companies, about a million dollars in a lump sum to purchase past service annuities for all employees who then joined the plan.

Any employee is eligible to join after he has been with the company for two years. Some idea of the extent of participation may be had by taking East Chicago Plant #1 as an example. At the end of November, 1946, 852 of the 1,306 employees in this plant who had been with the company for two years had joined the retirement system.

The third component of the employee relations policy is the General American plan of college scholarship awards. In 1944, to honor the memory of its employees who gave their lives for their country in the second world war, the company appropriated $100,000, which it turned over to the University of Chicago, for the education of the children of General American employees. When this fund is exhausted, the company plans to consider appropriating further sums for additional scholarships.

The awards pay up to $1,350 per year to the recipients. The children of all employees (other than officers and directors) who have worked in the company for three years or more are eligible. The University of Chicago administers the entrance examinations and makes the selection of candidates. Holders of scholarships who maintain satisfactory records may request renewal of the award to finance their entire college course.

Between 1944 and 1946, fourteen scholarship awards were made. These were given to nine persons, several of whom received renewal scholarships. The occupations of the parents of the scholarship winners include the following: welder, inspector, truck foreman, carpenter, acetylene burner, jig and fixture builder, electrician, attorney.

10. *Personnel Policies—Executive*

In its personnel policy, the company has not only had in mind the development of satisfying relationships with shop and office employees so that the rank and file, on whom so much of the company's progress depends, would constitute an efficient and stable working force, but also the maintenance of conditions under which executive personnel could be developed out of the ranks. The great majority of the company's present operating officials have grown into their present positions through promotion from within the company. Only in very rare instances has a man been brought into an important executive post from the outside.

This policy has borne rich fruit in the retention of able men; it has resulted in the company's possession of an almost priceless asset, an experienced executive staff. In the course of investigating the corporation's personnel history, I requested 97 officers and officials, listed in an operations report as holding positions of managerial responsibility in 1946, to supply certain biographical data. This information included the date of joining the company and titles or job descriptions of their original positions. The distribution of their lengths of service is as follows:

DATE OF JOINING	NUMBER OF PERSONS
Prior to 1920	17
1920–1924	16
1925–1929	25
1930–1934	15
1935 or later	24
Total	97

Thus, in 1947, only 24 of the 97 executives have been with the company for less than 12 years. Fifty-eight of these men have been with the company for more than 17 years, and 33 of them have served for 23 years or more. A number of those who have not been with General American itself for 23 years had, however, been with a predecessor company that was acquired by General American; they thus in many instances have had as long an experience in the types of operations for which they are responsible as though they had started out with General American itself.

Another analysis of the data discloses the extent to which both experience and promotion have counted in building this seasoned executive staff. A tabulation was made of those operating officials who originally started at General American in either a manual job or a relatively routine clerical capacity—as shop worker, checker, stenographer, draftsman, bookkeeper, office boy or messenger. Thirty-six men, among the 97 executives above discussed, began work for General American in such jobs before 1925. They rose to their present positions not only through the process of promotion from within but by ascent from the lowest rungs of the ladder.

11. *Leading Executives*

As has been said, any company's policies represent a reflection of the men who direct its operations. This book is not a biography of men; it is the story of a fifty-year-old organization. But as stated in our prologue, the men who have built the organization may appropriately be mentioned throughout the volume. They can not all be named, nor will space permit the extended treatment of any one individual. Of the chief builders of the enterprise, however, something may here be said. A longer list of officers appears on pages 30–32.

At the time of the publication of this book, the Chairman of the Board has served General American for half a century. He is the founder—he started the enterprise with literally no capital[8] —he expanded the venture to a company with a net worth of more than $1,600,000 by 1916 and then arranged for its first public stock offering. Beyond any question, its successful financing was due principally to him. He inspired confidence, not by promotional promises but by his substantial manner, his sure handling of facts and figures, his ease and graciousness of presence. Fred Klippert told the writer, some thirty years later, of the chairman (then president) bringing a party of Philadelphia bankers to visit the shops. "I could see that they had confidence in Max," said Klippert. "He knew how to show them the plant, and knew what to say. One of them took me aside, asked me a question or two, and then remarked to me how impressed they were." Similarly a New York banker who later underwrote some of the company's security offerings said to the writer, "We were interested not only because of the growth that General American had shown; we bet on its future largely because of Max's ability and character—we all thought he was a 'comer.'"

Max Epstein remained president from 1898 to 1929; then he relinquished the presidency but remained chairman of the board. Elias Mayer, a lawyer who had been secretary of the corporation, became president for two years. Mayer had been a member

[8] See pages 1–3 above, which recount his establishment of the Atlantic Seaboard Despatch.

of the Chicago firm of Stein, Mayer and David; he returned to the practice of law with that firm in 1931.

He was followed, as president of General American, by Lester North Selig, who served as operating head of the company from 1931 to 1945, when he became vice-chairman of the board. The higher position is, however, a full-time executive post. Selig, only 35 when he was elected to the presidency, has been with General American since 1913. Successively he has been a shop employee, purchasing agent, assistant to the president, president, and vice-chairman. He has wide interests, intellectual as well as commercial. His work is characterized by energy, enthusiasm and conscience. Few corporations have ever had presidents who have been more respected and better liked by the rank and file as well as by their immediate associates.

In 1945, Sam Laud was elected as the company's fourth president. Laud began work in the East Chicago plant as a painter in 1916. He was brought to the general office in Chicago in 1920, and became comptroller and executive assistant to the president in 1931. Like Selig, he is studious, analytical and well-read. He knows literature, political science and sociology along with accounting, car building and manufacturing. In making a qualitative analysis of Laud, as with Selig, a Sinclair Lewis could find a vast enthusiasm for business but, in the chemist's language, no trace of Babbittry. Both men are optimists, but they are also realists.

The vice-presidents who have occupied important positions in General American are many, but only several will be named in this chapter. David Copland started as an office clerk and stenographer in 1901, and has for many years been a vice-president of the parent company. For a considerable period he was in charge of sales, and throughout the company's development he has been an invaluable aide to the founder of the business.

When the corporation decided to engage extensively in the manufacturing of freight cars (as distinguished from tanks), it sought a man experienced in that field. LeRoy Kramer, formerly a vice-president in charge of all passenger and freight car shops for the Pullman Company, was brought in as vice-president of

General American. A conspicuously successful manufacturer, he had also had railroad experience. He soon was responsible for all of General American's plant production. On the occasion of his retirement in 1946, the company magazine pointed to his production achievements but stressed another trait of Kramer's life which suggested that the editor may have known his Aristotle. Mr. Kramer, said Editor Robin Douglas, has "shown himself . . . not only a good railroad man and a good business man, but also a '*good* man.'" Charming, kindly, surpassingly honest and forthright, LeRoy Kramer merited that accolade.

Kramer was succeeded by W. J. Stebler, who had been in charge of production at Sharon. Other vice-presidents, some of whom are mentioned in succeeding chapters, include Bennett Epstein, long in charge of the New York office; J. P. McFadden, who has succeeded him; H. E. Coyl, in charge of car leasing; W. W. Fowler, exports; C. L. Philipp, refrigerator cars; Jerome S. Selig, terminals; D. H. Smith, traffic; W. S. Hefferan, Jr., legal; and J. C. Vorhauer, purchasing. Additional present and past officers of the corporation are listed in the table of "Senior Officers and Operating Officials" shown at the end of this chapter.

12. *An Overall View*

In thus growing from a company with a business volume of $14,000 and a fleet of 131 cars in 1903 to a diversified enterprise with assets of more than a hundred million dollars in 1947, General American has not only served its customers' needs as those needs have expanded, but has steadily sought to initiate new ways of meeting the requirements of different types of shippers and industries. The preceding sections of this chapter have traced the company's general evolution in terms of financial and geographic origins, and physical plant and equipment. At this point it may be advantageous to survey these preliminary results by taking a bird's-eye view of the enterprise as it stands in 1947. While such an overall view will only highlight the developments that are traced in greater detail in later chapters, it will afford a quick summary of General American's divisions and activities as they appear at the half-century mark in the corporation's history.

The company's original activity was the ownership and leasing of cars—tank and refrigerator. This accounted for 100 per cent of all revenue up to 1907.

Since 1907, the two chief sources of revenue have been leasing cars and manufacturing cars. The car-building activities at first embraced only tanks, but since 1923 all types of railroad car equipment have been built except passenger cars. The ratio of rental activity to manufacturing activity has fluctuated drastically with the business cycle. In low years, car building falls almost to zero; in good years, it amounts to as much as 30 or 35 per cent of all gross revenues. In 1946, which was neither a boom nor depression year, gross revenue from new car construction and repairs equalled about 33 per cent of total volume, that from car rental equalled about 42 per cent, and that from other activities equalled about 25 per cent.

The fleet which General American today leases to shippers, and which numbers about 55,000 cars, constitutes approximately one-fifth of the privately owned freight cars in the United States, and about three per cent of all cars owned privately and by railroads. In years of active manufacturing, the cars built by General American have amounted to about 8, 9 or 10 per cent of the new car output of all carbuilders, railroads and private line shops.

The significance of General American's activities in other than car fields, which now account for one-fourth or more of its gross revenues, cannot be measured entirely by their percentages of gross income. This is true for several reasons. For one thing, the rate of return on invested capital is substantially higher in some of its newer divisions than in the railroad car business. As data presented elsewhere show, the return has been declining for some years in tank and freight car operations. Strictly speaking, figures for the General American return on invested capital during the last few years do not show the return in just the car business, because the profit rate for the company as a whole is charted; but since car manufacturing and leasing still comprise the great bulk of General American's capital investment, the statement is essentially correct. This, of course, is one basic reason why the management decided to embark on these other enterprises.

Furthermore, several of the activities carried on by the newer divisions are yet in their infancy. Constant research and scientific progress will undoubtedly cause their products to improve, their manufacturing and service costs to decline, and their markets to broaden greatly. In 1950 or 1960, their contributions to the General American gross and net revenue pots may far exceed the present figures, both actually and percentage-wise. The newer divisions represent the management's bid for future business; they reflect the General American executives' unwillingness to accept the limits of opportunity that a matured market such as the railroad field necessarily imposes.

Finally, some of the "other" divisions provide a hedge against general business fluctuations, seen or unforeseen. Either short-time cyclical changes or long-run changes in economic trends may affect a specialized enterprise disadvantageously or even disastrously; but a well-diversified business has more than one string to its bow. Hence the General American investments not only in activities directly related to the car business, like terminals and precooling, but also in process equipment on the one hand and plastics on the other.

A final and rather striking summary of the company's development and diversification of activities during the past two decades can be seen in Chart 5, before mentioned but not discussed in detail. The three years chosen for analysis were prosperous ones for the corporation; they thus do not reveal cyclical fluctuations. The diagram does, however, graphically illustrate both the increase in total volume and the constantly growing diversity of operations.

The chart shows that in 1924, after recovery from the 1922 depression, total gross volume was $27 million. This was derived, however, from only two sources—the manufacture of new cars and tank car rentals. About $22 million came from car manufacturing and the other $5 million from rentals.

By 1937, again a good year after recovery from a severe depression, total volume was about $54 million.[9] This includes the production of cars made for the company's own fleet, as did the 1924 figure. But the ratio of revenue from services has risen sharply. Whereas in 1924, it was less than one-fifth of the total, the service revenue is now two-fifths. Moreover, a second step in the direction of stabilizing income has been undertaken: the establishment of the Terminals and the Precooling divisions.

In 1946, total volume amounts to $75 million,[9] of which about 45 per cent is revenue derived from services. Diversification is now firmly established as a policy. Manufacturing output consists not only of volume from new car sales and from cars made for the company's own fleet, but also from motor coaches and parts, plate and welded products, process equipment and plastics. All of these contribute a million dollars or more each to the corporation's gross income.

Thus six new sets of activities, unknown in 1924 and barely thought about in 1937, substantially amplified the company's sphere of operations in 1946: motor coaches, storage terminals, plate and welded products, process equipment, plastics, and precooling.

Before leaving this discussion of diversification, two points are to be remarked. It is notable, despite the degree to which diversification has taken place, that General American is still significantly a *tank car* company: its service revenue from tank cars continues to be a very substantial item of income.[10] In 1946, the figure comes to about $14 million from this source alone.

The second fact yet to be noted in the chart is that the dollar volume of new tank and freight cars manufactured and sold to others shows no growth between 1924, 1937 and 1946. In other words, the railroad car market is stabilized except for the occasional gluts and shortages occasioned by cyclical fluctuations, and by the interruptions of production caused by wars and other unpredictable events. It was largely a recognition of this factor

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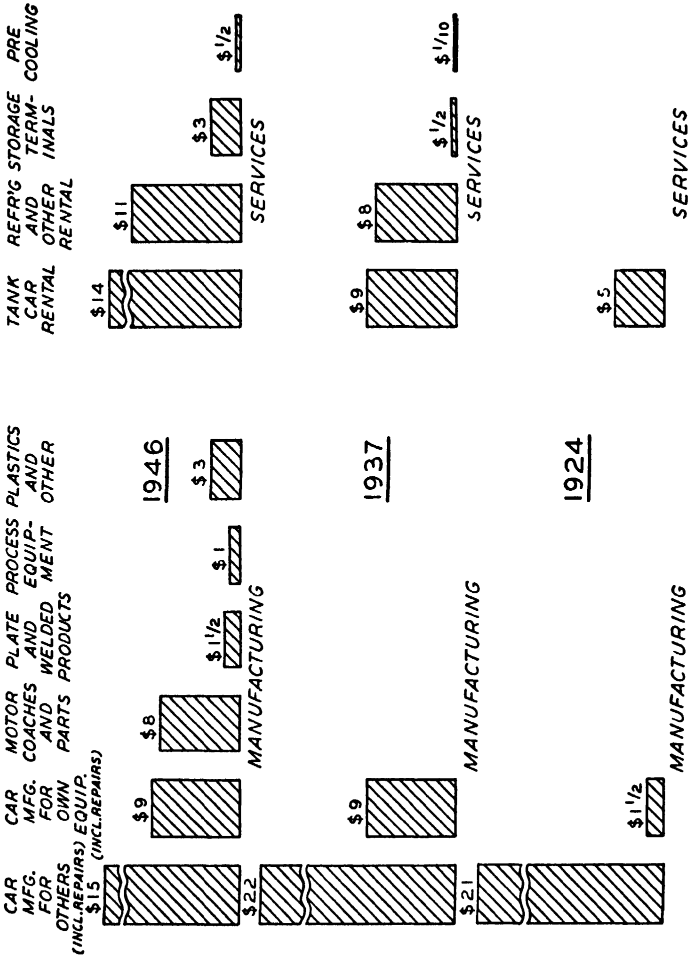
[9] This figure includes the cars made for the company's own fleet, for statistical consistency with previous figures, but not mileage; see note 10.

[10] The figure charted is reduced by subtraction of the mileage credited to customers; in this sense, it understates the "gross revenue from rentals." See Chapter II for an explanation of "mileage."

CHART 5

GROSS VOLUME BY TYPES OF ACTIVITY

(IN MILLIONS OF DOLLARS)



that led the management to embark on the program of diversification during the past two decades, coupled with considerations of the higher rate of return on investment possible in newer and less stabilized fields.

SENIOR OFFICERS AND OPERATING OFFICIALS, 1898–1948

The list of senior officers is complete for the periods indicated. Dates of service are not shown except for the board chairmen and president. The "other operating officials" is a selective group. For a complete list, see pages 158–70. Except for the office of President, all names appear in alphabetical order. A "D" indicates that the official is deceased. An "R" indicates resigned or retired.

BOARD CHAIRMEN AND PRESIDENTS, 1898–1948

Board Chairman

Max Epstein, 1898–(see also "Presidents")

Vice-Chairman

Lester N. Selig, 1945–(see also "Presidents" and "Assistants to President")

Presidents

Max Epstein, 1898–1929
Elias Mayer, 1929–1931–(see also "Secretaries")
Lester N. Selig, 1931–1945–(see also "Assistants to President")
Sam Laud, 1945–(see also "Assistants to President" and "Comptrollers")

VICE-PRESIDENTS (1916–48)

Henry Butler (R)
David Copland
H. E. Coyl
Walter J. Curley
Robert R. Dunn (D)
Bennett Epstein (R)

VICE-PRESIDENTS (1916–48)—*Continued*

Walter W. Fowler
W. S. Hefferan, Jr.
LeRoy Kramer (R)
A. W. Lissauer (R)
John P. McFadden
Cyrus L. Philipp
R. C. Pierce (R)
Jerome S. Selig
R. J. Sharpe (D)
D. H. Smith
W. J. Stebler
John M. Sweeny (D)
J. C. Vorhauer

ASSISTANTS TO PRESIDENT (1916–48)

Herman Altschul
C. H. Coyle (R)
B. A. Kiekhofer
Sam Laud
Lester N. Selig
Frank Selz

COMPTROLLERS (1916–48)

Sam Laud
Arthur A. Selonke
John M. Sweeny (D)

TREASURERS (1916–48)

M. P. Kraffmiller (R)
E. E. Schulz
W. J. Woodward (R)

SECRETARIES (1916–48)

Oscar Blumenthal (D)
Maurice J. Feldman
W. S. Hefferan, Jr.
Elias Mayer (R)

PARTIAL LIST OF OTHER SENIOR OPERATING OFFICIALS (1910–48)

J. S. Acworth, Chief Executive, Repair Sales
Harry Birmingham, Traffic Manager
Edward J. Campbell, Chief Maintenance Officer
M. F. Covert, General Superintendent, Wood Car Maintenance
Hugo Epstein, Chief Executive, Storage Terminals (D)
L. J. Ferderber, Chief Executive, Precooling Division
James S. Frey, Manager, Sharon Plant
Lloyd Gross, General Manager, Aerocoach
G. Gutzeit, Director of research laboratories

Wilfred R. Hennig, Superintendent, East Chicago Plant #2
Henry Hunter, General Sales Manager, Process Equipment
Fred Klippert, Superintendent, Sharon Plant
Thomas A. Mathieson, Assistant to Vice-President and Manager, East Chicago Plant #1
Arthur O. Miller, Manager, Sharon Plant #2
J. E. Moul, President, Turbo-Mixer
Ralph T. Musser, West Coast Sales Manager (D)
O. J. Parks, General Superintendent
Jesse G. Penwell, General Superintendent, East Chicago Plant (D)
Fred J. Plattner, General Superintendent, Storage Terminals
David Rosenfeld, Director of Engineering (D)
C. A. Shoemaker, General Superintendent (R)
Harold D. Skyrm, Sales Manager, Plate and Welding
J. W. Staples, General Manager, Milk Car Division
Charles L. Thompson, Assistant to Vice-President (Refrigerator cars)
Rea W. Thompson, Director of Engineering
Howard C. Westfall, Eastern Manager, Storage Terminals

CHAPTER II

DEVELOPMENT OF CAR LINES, LEASES AND RENTALS

1. *Overall Growth*

IN 1903, General American's fleet boasted 131 cars. The rental of these cars constituted the company's entire business. Thirty-seven of the cars were tanks and 94 were refrigerators.[1] The tanks were used for the shipment of petroleum and lard; the refrigerators, for meat and packing-house products. For the tanks, $18.00 per month was charged for rental. Out of this gross amount, General American paid for repairs and maintenance and serviced the cars; and the customer frequently paid far less than this for the car's use because the "mileage" paid by the railroad to General American was credited to the customer —this all requires explanation.

The theory of "mileage" is briefly as follows. The railroad, as a common carrier, not only hauls commodities but in most cases furnishes all of the equipment needed for their transport. If a producer ships furniture, coal or steel beams, the railroad provides a box car, hopper car or flat car in which to carry the lading. But in the cases of oils, asphalts, acids, gases, molasses, wines or other commodities using tanks, the railroads, almost without exception, do not supply the cars. They are owned by private companies—either by the shippers themselves or by car lessors like General American. Since the car in each such instance is provided to the railroad, the railroad collects the freight rate from the customer but pays so much per mile to the car owner for having supplied the equipment. In the case of tank cars, this figure in 1903 was ¾ cent per mile; in 1948 it was two cents per mile. More will be said of the theory of car leasing and operation in later places; the foregoing is merely a simple explanation of the reason why mileage is paid by the railroad to the car leasing line and, since the customer has already guaranteed to pay a rental to the line for making the car available to him (and to the railroad), of the reason why the railroad's mileage payment is credited against the customer's rental—today, up to the full amount of the rental.[2]

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[1] When the term "refrigerator" is used, a freight refrigerator car is meant unless otherwise specified. The "passenger" or "express" refrigerator car is a different type; it is a heavier, longer and faster car designed to travel chiefly with passenger trains as does a milk car or baggage or general express car. General American owned no passenger refrigerators until 1924.

Refrigerator cars are rented on a straight basis of miles run. In early years this was 1 cent and later 1½ cents; today it is 2½ cents. Express refrigerator cars rent for 3 cents per mile. As with tank cars, the lessor repairs, maintains and services them.

From the 131 cars owned by General American in 1903, of which most were refrigerators, its fleet expanded to 1,077 cars in 1912, of which *all* were then tanks and none refrigerators. The expanding oil and automobile industries had made tank car leasing a more profitable business than refrigerator cars, so for twelve years after 1912, General American's rental activities were restricted entirely to tanks.

By 1924, the 1,077 tanks that had comprised the line in 1912 had grown to 10,385. In 1924, some *express* refrigerator cars were added, 150 of them, and in the next year, 50 more express and 150 freight refrigerators were annexed. By 1928, nearly 600 express and more than 3,000 freight refrigerators were in the fleet. Together with about 18,500 tanks and 1,800 newly acquired stock and other cars, this made a line of 24,000 cars in all.

That was as of the end of 1928. Today, in 1947, these figures are quadrupled for refrigerators and about doubled for tanks. As of the last quarter of 1947, the figures for 1928 and 1947 are as follows:

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[2] By I.C.C. ruling in 1934, it was held that a shipper receiving in mileage anything *above* the amount of the rental for the use of the car was being given a rebate—hence the limitation "up to the amount of the rental."

	NUMBER OF CARS	
	1928	*1947**
Tank	18,518	38,000
Freight Refrigerator	3,076	13,000
Express Refrigerator	575	900
Stock	1,721	1,750
Milk**	115	275
Hopper		450
Special box		250
Total	24,005	54,625

The year-by-year statistical account of cars owned, by types, is given in detail in Chart 3 and Table 3. As of 1947, the General American fleet numbers approximately 20 per cent of all privately owned freight cars (including tank cars) in the United States, and about 3 per cent of all railroad and privately owned cars in the country.

2. *Economic Basis of Rental Service*

Many tank cars, as will be brought out in a later discussion, are of a specialized nature; they are especially designed to carry particular kinds of liquid or gas. The railroads, therefore, do not provide them—either the shipper or the car line does. Why does the shipper today usually prefer to *lease* rather than *own* his cars? And why have numerous shippers, who once did own their own fleets, sold them to General American and executed leases to cover their needs?

The answer lies partly in the intermittent character of many shippers' use for their equipment. Numerous commodities are seasonal in either their production or sale. Asphalt, for example, is used during the seasons when roads can be built in certain regions. Molasses is moved during only about six months of the year; cottonseed oil likewise is transported in volume only during certain months. A fleet of 100 standard tank cars, depending on the year in which manufactured, involves an investment of from $180,000 to $550,000.[3] It is not economical for a shipper to make such an investment, tying up his capital continuously for eight, fifteen, or even twenty to thirty years, when the cars would be idle for a quarter, a third or a half of every year. Were he unable to lease equipment as he required it, there might be no alternative; but a car leasing line can rent to him during the months he needs the equipment and then put the same equipment to work for other shippers having different seasonal peaks during other months.

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* Estimated as of August, 1947.

** Owned by General American-Pfaudler Corp., a subsidiary half-General American owned.

From year to year, likewise, some shippers find it cheaper to rent, regardless of seasonal factors, because businesses vary greatly in their fluctuations during different phases of the business cycle. A staple food or tobacco manufacturer may be subject to little or no cyclical variation; his annual volume may not decline or increase by more than 2 per cent from good years to bad. On the other hand, a chemical, steel or machine tool manufacturer may experience a decline of 75 per cent or more from a peak year of prosperity to the trough of depression. Under a modern rental arrangement, it may be possible for such shippers to relieve themselves of a portion of the financial burden which constant ownership would entail.

Even apart from seasonal and cyclical factors, rental is preferable to ownership for most shippers. By avoiding the necessity for making a capital investment, it shifts the risk connected with any such investment to a company that specializes in car operation. This operation can be carried on at lower cost by such a specialized leasing company for several reasons. For one thing, no shipper is large enough—in terms of the number of cars he would operate—to maintain as sizable and well-equipped repair shops all over the country as can General American. Nor could he manufacture or purchase parts, experiment with repair methods, check and audit mileage figures, in the same way and on the same scale as can a large car company with a huge fleet of cars. A subsequent section of this chapter discusses the detailed reasons underlying the economy of operating such a very large fleet; here we merely make the point that the operation of 40,000 or 50,000 cars by one leasing company permits it to offer both lower cost transportation and also a far more flexible service than are ordinarily available to the shipper who owns his own fleet, even though the shipper's fleet comprises several thousand cars.[4] This is why such shippers as the Texas Company, Procter and Gamble, and Swift and Company have in recent years turned over their fleets to General American and now lease their cars from it.

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[3] The figures cited are for cars of 10,000 gallon capacity, not insulated or coiled.

The smaller shipper, too, obtains a flexible service, tailored to suit the needs of his business. Tank cars rent for from $40 to $150 a month, depending on the capacity and class of car. Some shippers, however, need a car for only one trip a month. They may rent by the day—for as little as a few dollars a day if the car is used for only a week or two, or for a minimum total charge of $15 if the car is used just for one or two days. Such customers simply charter cars, as it were, for single trips without further obligation on either their part or General American's. Other shippers, like the United States Steel Corporation, at some seasons or in some years may need 150 cars and at other times require 300 cars simultaneously operating. With a shipper of this kind—be it a metals, chemical, petroleum, food products or textile company—General American will write a term contract. The shipper will agree to get his cars from General American as he needs them, and General American in turn will meet his requirements as they ebb and flow with the changing tides of his business.

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[4] The half dozen largest shippers that today own their own fleets have fewer than 1,800 cars each; but even with a fleet of 5,000 cars, which one or two shippers have operated in the past, it is doubtful if the scale of activities is great enough to achieve the economics that a specialized car operating enterprise enjoys. This is particularly true in the provision and maintenance of repair facilities; on this subject, see section 6 below. In 1929, the General American fleet reached a size that was six times the larger figure just mentioned, and since 1935, its size has been more than 10 times the 5,000 car figure. A shipper would probably not need to have 50,000 cars in his fleet to achieve General American's economical rate of operations, but he would doubtless require several times the 5,000 car figure.

In sum, then, the tank car reduces costs of manufacturing and distribution by providing for the bulk shipment of liquids and gases. It eliminates the necessity of filling, loading and moving small containers—barrels, carboys, drums—and returning them when empty. It enables the shipper whose needs are intermittent *to lease the container,* thus reducing his investment and bringing him flexibility of transportation service.[5] General American did not develop or build the first tank cars although, during the past 50 years, it has made many contributions to the art and technique of tank car engineering and manufacture; but it did pioneer in development of the leasing idea. The Atlantic Seaboard Despatch, conceived in 1898 on the day when Epstein acquired his 28 second-hand cars, was the first car-leasing line. Those 28 cars were the basis of the present fleet of 55,000 cars and of the $25,000,000 gross rental revenue in 1946, as well as of the flexible service contract now used by the corporation in meeting the needs of some 1,100 customers.

These customers are engaged in all manner of industries. Many of them are concerns with which General American has done business for two, three or four decades. Among the companies that have rented cars from General American for the last twenty years or more are the following:

Gulf Oil Corporation
E. I. du Pont de Nemours & Company
Koppers Company, Inc.
Corn Products Refining Company
Ashland Oil & Refining Company
Shell Oil Company, Inc.

[5] It may be asked whether pipe lines are not more economical than tank cars for the transportation of bulk liquids, just as shipment in cars is cheaper than drums and carboys. The answer is that the pipe line, used mainly in the movement of petroleum, is an adjunct of the tank car rather than just a competitor; it competes but it also complements. The pipe line is economical for the transmission of standard bulk liquids over a fixed route; the tank car is flexible and serves a multitude of products over varied routes.

Hercules Powder Company
Lever Brothers Company
Penick & Ford, Ltd., Incorporated
Socony-Vacuum Oil Company, Inc.
The Texas Company
Garrett & Company, Inc.
Phillips Petroleum Company
Clinton Industries, Inc.
Standard Brands, Incorporated
Newport Industries, Inc.

The discussion up to this point has assumed the use of standard, or fairly standard, tank car equipment by the shipper. The majority of General American cars are of this type. Some five or six thousand tanks, however, are not; they are of specialized construction and were built particularly to meet certain shippers' needs. Such cars will be described in the next section of this chapter, but here it will suffice to say that they necessarily are leased on somewhat different terms than the more standardized cars. If a car is especially built for a shipper who requests that the tank have a certain lining, or special insulation, tank thickness or fittings that make it unadapted to other types of service, then obviously the customer must either make an outright purchase of the custom-built piece of equipment or else lease it at higher rates, or for a longer and more definite period, than in cases where the use of the car is not restricted to his peculiar type of product. Yet a very large number of General American cars have been thus specially built and successfully leased, the rental agreement as well as the engineering design of the car in each case being especially worked out between the corporation and the customer. Illustrations are given elsewhere in the book.

The genesis of the practice of rental, in terms of the historical relationship between shippers and railroads, was stated by Mr. Selig in a lecture given General American employees on the occasion of a training course which the corporation conducted at the Chicago office some years ago. In the course of his discussion, he traced the development of special cars in the railroad industry, in part as follows:

> Quite a few years ago certain shippers of petroleum products felt that the railroads should supply tank car equipment as they would supply other ordinary types of cars, such as box, hopper, gondola, flat, or refrigerator cars, and made demands upon the railroads to so furnish. The railroads refused . . . stating that they were not under the common-law duty of furnishing special equipment . . . The railroads held that tank car equipment was not standard . . . The shippers said they were and the case was argued before the Interstate Commerce Commission, Case No. 4906, vol. 50, I.C.C., 652 . . .
>
> Now, as a matter of fact, there are two points of view . . . in the early days of the oil industry there was very serious doubt . . . as to how long the oil pools that were then tapped would last . . . the industry itself was really regarded as a very temporary and precarious one from the viewpoint of its stability and future. Doubtless the railroads also had this feeling which prompted them to take the position . . . that they were not going to equip themselves with vehicles of transportation for hauling the products of an industry which might not be in existence very long. From this point of view they were all wrong, but from an operating point of view and from a transportation point of view they were right in their policy . . . If most of the oil-carrying roads had to equip themselves with [the many] types of cars . . . tremendous financial burden would be imposed on each road, because from a traffic point of view, each road would have to equip itself in order to get and hold the business; to say nothing of the tremendous operating difficulty . . . in having the proper type, condition and size of tank car available for the innumerable number of shippers who might make demands on them. So from an operating point of view, the railroads were right in their policy. In any event, the Commission decided that tank cars were special equipment and that the railroads were not duty bound under the common law to furnish them.[6]

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[6] Lester N. Selig, in an employees' training course lecture, "The Work of Our Company," November 3, 1934.

3. *Types of Tank Cars*

It has already been stated that of the 38,000 tank cars in the General American fleet, approximately 32,000 are more or less standard; by this expression we mean that the car, after carrying one commodity and then being cleaned, can be used to carry one of several other liquids. A tank used for crude oil can, for example, also be used to transport gasoline, kerosene or fuel oil. But there are limits to such alternate uses; a petroleum car is, for example, unable to carry the muriatic acid which is used to clean the pipes of oil wells. A muriatic acid car must have a special tank with a rubber lining. Used also in the manufacture of dyestuffs, glucose and glue, this chemical—also known as hydrochloric acid—is of great commercial importance. Without the rubber-lined tank car, its shipment would cost far more. Similarly, caustic soda, used in rayon manufacture, must be shipped in a special car that retains heat—the lading is poured in while hot, and must remain warm to avoid flaking.

Wine cars, casinghead gasoline cars, and chlorine cars were among the first special-purpose tanks developed by General American. The first chlorine car—called "high-pressure" because it had to withstand the pressure of gas without leaking—was built experimentally for the Electro-Bleaching Chemical Company in 1916. Its tank was welded instead of being fabricated with the usual rivets. Later, such cars also were insulated with cork. The following year, General American received an order for five additional chlorine cars from the same company.

Chlorine was only the start. Cars to transport acetic acid, alcohol, butane, caustic soda, nitric acid, sulphuric acid, tannic acid and countless other commodities followed. Sometimes the necessary adaptations were comparatively simple, at other times the new designs were radical and the engineering problems were complex. The net result is that today, General American has 207 different types of tank cars in service. They carry acids, gases, oils and beverages—"from propane to port wine to pine tar." They are lined, coiled, insulated, vented, riveted, welded and fabricated in scores of ways to serve the manifold needs of the food, chemical, construction, fuel, textile, transportation and other industries.

Some additional data on these special types of cars appear in a later chapter on manufacturing. As illustrative, however, of the variety of problems encountered and the specific solutions worked out to meet customers' needs and broaden the field of tank car usefulness, the following brief and quite incomplete table may here be introduced.

SELECTED SPECIAL CAR TYPES

COMMODITY	FEATURES OF CAR
Acetic acid, glycerine, etc.	Welded aluminum tank
Alcohol (grain)	Synthetic resin base lining
Anhydrous ammonia	High pressure tank, 4″ cork or Fiberglas insulation
Calcium hypochlorite	Glass-lined tank, cork insulation
Caustic soda	Nickel-clad lining, or latex rubber base lining
Helium	30 longitudinal high pressure cylinders
Muriatic acid	Rubber-lined tank
Nitric acid	Chrome (stainless) steel tank
Rosin	26 heater coils (approximately 1,000 feet of pipe)

It goes without saying that the detailed capacity and fittings of tank cars vary as does their overall type of construction. The standard tank is usually of 8,000 gallon capacity, but tanks as small as 4,000 and as large as 16,000 gallons are built. The number of domes, through which the tanks are loaded, may range from one to six; the inlet and outlet valves, coils and auxiliary arrangements all are adapted to the particular purposes and uses for which the cars are intended.

Many of the special types of tank cars, originally designed by General American to carry one commodity only, were later found adaptable to the transportation of other products. Thus what started as special cars became semi-standard pieces of equipment with far broader usefulness than first envisaged. Three examples may be cited. The aluminum car, originally built for the shipment of glacial acetic acid, is now used also in the shipment of nylon salt solution, hydrogen peroxide, acetic anhydride, nitrogen solutions as well as C.P. (chemically pure) glycerine and certain concentrates of nitric acid. The rubber-lined car, originally designed solely for the shipment of muriatic acid, is now widely used to transport formaldehyde, phosphoric acid, aluminum sulphate and hydrofluosilicic acid. The high-pressure car, first designed for the shipment of chlorine, was within a few years built in larger capacities to transport propane, anhydrous ammonia, and tetra-ethyl lead (used in ethyl gasoline). The shipments of these products constitute as important fields for the high-pressure car as did that of the original chlorine. In these ways the "special cars," at first conceived exclusively for particular tasks, have often opened up new fields for themselves; in a constantly broadened range of industries, they have promoted the bulk shipment of liquids and gases and reduced costs.

Thus from Maine to California and from Manitoba to Mexico, all types of tank cars carry their ladings, serving the myriad needs of their lessees. Originally intended to carry oil and gasoline, their scope has been broadened to embrace almost every product that will flow in liquid or semi-liquid form. Literally ubiquitous, the 38,000 tanks of General American's fleet wander the length and breadth of the land.

4. *Development of Present Car Lines*

The total fleet of 55,000 General American cars is really not one but several car lines, integrated into one vast set of operations. It is composed of General American-built cars and of cars taken over upon the acquisition of certain other companies. Some of these fleets were operated separately for a time and then merged, some were immediately merged, some are still operated so as to retain their original identities. The chapter on financial history will give further details concerning the acquisitions; the present section merely indicates the principal breakdowns.

The corporation's tanks are operated as one GATX fleet of 38,000 cars, although many groups of cars, such as the Texas (Oil) Company's line, also bear the lessee's name. Refrigerator cars are divided into several groups, of which the following are among the largest fleets:

Union Refrigerator Transit
General American Refrigerator Line
General American Refrigerator Express
Swift Refrigerator Car Line

All of these are owned by General American. The Swift Line, acquired in 1931, is leased exclusively to Swift and Company. The URT Line, purchased in 1929, has its headquarters in Milwaukee. Milk cars, of which 275 are operated, belong to the General American-Pfaudler Corporation, offices of which are at the General American headquarters in Chicago. Stock, hopper and special box car lines are operated directly by General American under its own name.

The number of present tank cars obtained by General American through the acquisition of competing car leasing lines (or obtained by building replacements for such acquired cars as they have worn out) constitutes only a minority of the corporation's total fleet, important though the acquisitions have been. A chronological list of the chief car leasing lines acquired over the years is as follows:

Year	*Company*	*Cars acquired*
1926	Federal Car Line	740
1927	Constantine Tank Line	1,061
1928	Quaker City Tank Line, Inc.	2,417
1928	Standard Transit Co.	2,827
1929	Liquids Dispatch Line, Inc.	1,507
1935	Pennsylvania-Conley Tank Car Co.	8,096
	Total	**16,648**

In refrigerators, the purchase of Quaker City in 1928 brought 2,158 cars and that of Union Refrigerator Transit in 1929 resulted in 4,912 cars. Unlike the tank line, more than half of the General American refrigerator fleet has been built up through the acquisition of cars taken over with the purchase of other companies.

5. *Customers and Contracts*

Previous sections of this chapter have emphasized General American's efforts to care for every type of customer whose product or raw material can be carried effectively by the cars it has for lease or can specially build. These customers comprise a cross-section of American industry and commerce. Some of them have been leasing General American cars for nearly half a century; others are new concerns that have only been in existence half or a tenth as long as General American itself.

There is, to be sure, substantial competition in the car leasing business just as in the car manufacturing business. The Shippers Car Line, controlled by the American Car and Foundry Company, is one competitor.[7] The North American Car Company, which operates both tanks and refrigerators, is another. Union Tank Line, with a tank fleet of about the same size as General American's, is a third competitor.

General American endeavors to meet competition by offering an efficient service to all shippers whether large or small, and by giving the large shipper an especially flexible contract that will best meet the fluctuations—seasonal, cyclical, and long-time movements—in his business.

The contract, filled in to suit the needs of each customer, that General American now uses in tank car leasing contains only 14 short paragraphs, all in large type and clearly and simply stated. Its chief provisions are as follows:

> General American agrees to furnish to the Customer the following described tank cars, for which the customer

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[7] American Car and Foundry Company is also the most important General American rival in the car manufacturing field.

> agrees to pay General American the following service charges:
>
> | Number of cars | Type | Approximate Capacity (in gallons) | Service Charge Per Car Per Month |
> |---|---|---|---|
> | .... | ..... | .... | .... |
>
> . . . The Customer agrees to use the cars exclusively in the Customer's service for commodities that will not injure the tanks thereof.
>
> . . . General American agrees to maintain all cars furnished hereunder in good condition and repair.
>
> . . . The Customer agrees to furnish . . . reports of dates loaded and shipped, commodity, consignee, destination and full junction routing, and General American agrees to keep records pertaining to the movement of the cars. General American shall collect all mileage earned by the cars and shall credit said mileage to the car service account of the Customer, provided however, that the total of such mileage credits shall not exceed the aggregate service charges payable.
>
> . . . The Customer agrees to so use the cars that their mileage under load shall be equal to their mileage empty on each railroad over which they move, and, upon the termination of this Agreement, should the empty mileage on any railroad exceed the loaded mileage, the Customer agrees to pay General American for such excess of empty mileage, at the rate established by the tariff of the railroad on which such excess is incurred.
>
> . . . The Customer shall make no transfer or assignment of this Agreement without the prior written consent of General American.

Approximately 700 General American customers rent their cars on term leases of this kind; they are thus assured of having just what specialized equipment they want, when and where they want it; and they are entirely relieved of the necessity for investment in capital assets of this character.

The tremendous variation in the many calls on the company to meet the multifarious needs of its customers in every field of endeavor is well described by Bennett Epstein, vice-president in charge of the New York office, in his account of a single day's work on the part of his sales staff. This description, presented in 1934 in the company's employee training course, does not hold equally well today because under current operating conditions (in 1946–48 the demand for cars far exceeded their supply) the company is not able to give as rapid service as it did formerly and as it hopes to do again. Nevertheless, the following account gives a good picture of the manifold needs served in 1930 and also in 1946–48; in fact, an even greater variety of specialized requirements was called for in the 1940's, even though they were not always met with the same dispatch as in times when cars were not in short supply.

> One man calls up for a 10,000 gallon car with steam coils for a single shipment of coal-tar from Baltimore to Philadelphia. Another telephones that a foreign tank-steamer is due next Wednesday with a cargo of cocoanut oil from the Philippines. He must have ten clean 8000 gallon cars at the steamer's side that day. Here's a man that wants three uncoiled 8000 gallon cars on a monthly basis to carry high-grade grain-alcohol to whiskey-distilleries. A man from California comes in. He needs a suitably lined compartment car to bring wines from the California vineyards to New York . . . Here's a man who needs 5 cars for a single haul of peanut oil. It occurs to us that he has had similar demands every two or three weeks for the last few months, so we suggest that he lease cars by the month instead of for single trips and save himself a good deal of money.
>
> Now a customer has a shipment of olive oil from Italy to ship to the makers of Palmolive Soap. Another soap manufacturer wants us to work out a lease-renewal. He uses several hundred cars, mostly for storing cocoanut oil and palm oil, as he owns no storage tanks. He also receives tallow, ships glycerine and buys large amounts of cottonseed oil during the fall months. Here is a problem that will require a good deal of study to bring these diversified needs under a comprehensive lease. Here's a

new one. A man wants to ship sugar in liquid form to candy manufacturers. Yes, we will coat tanks on the inside with a sugar enamel and have five cars ready for him next week.

The States of Pennsylvania and Connecticut are going to place contracts next month for extensive new roads and road repairs. Three prospective bidders call, wire or telephone to make sure we can supply them with 50 to 100 tar and asphalt cars starting April 1st. One large chemical company wants 5 absolutely clean cars for a new chemical they have brought out, so new that they won't even divulge its name. Here's someone who is going to have a steady run of lubricating oil from Pennsylvania to Cuba, the cars to travel on car ship of the Seatrain Lines from Hoboken to Havana. He will ship 3 cars a week and the Seatrain Lines don't like to bring back empty cars. We must work out a trip arrangement to supply three cars weekly to Pennsylvania and get the Seatrain Lines to return the cars as far as New Orleans to our Goodhope (Louisiana) shops . . . A producer of muriatic acid wants to lease a rubber-lined car . . . We will build and rubber line a car if he can lease it for five years to cover our investment in a special car with a limited field.

There were heavy blizzards in New England last night. Five shippers of gasoline and fuel oil telephone and wire us from Boston and Fall River to find out how many cars we can give them immediately until roads are open for motor trucks and waterways cleared of ice for barges. Here's a man who wants a few cars to transport turpentine from Georgia and Mississippi to the middlewest while the season lasts. This other is going to have a heavy movement of black-strap molasses to manufacturers of cattle-feed. He has been holding the molasses in storage and now that the price has risen wants to take advantage of the market. This rubber company is going to bring rubber over in liquid form instead of in solid slabs as heretofore. They tell us a little of how this latex is collected in pails from the trees in their plantation in Sumatra and transported by ox-cart to a small narrow-gauge railroad, which takes it to the seaport . . .

6. *Economies of Large-scale Operation*

In serving a very large number of customers thus geographically distributed, General American enjoys great advantages because of its size. These are reflected mainly in reductions in the cost of service, which effect both a saving for the customer and an enhanced profit for General American.

Professor F. W. Taussig once gave an illustration of the general economy of large-scale operations that has become classic. He cited the case of agricultural implement manufacture, in the course of a discussion of the historical development of production methods:

> The causes of the growth of large-scale production are to be found mainly in the revolutionary changes in the arts during the last century and a half. Underlying them all is the increasing division of labor and the increasing use of machinery. A necessary condition has been the widening of the market under the influence of cheaper transportation.
>
> A tool or machine of any kind is advantageous only if it is used for a number of operations. The greater the number of operations, the more it is worth while to have an elaborate tool, and to give much labor to its making . . . The greatest of the American corporations making agricultural implements, one that illustrates conspicuously the tendency to large-scale production—the International Harvester Company—has a machine whose sole work is to shape poles for wagons and harvesters. The machine cost $2500; it saves a cent per pole; it is worth while only because poles by the hundred thousand are made each year.[8]

Not only can General American manufacture cars much more cheaply when it builds 100 or 500 of a type instead of one or two, but it can service both its own and its customers' cars far less expensively, just because its scale of operations is so large. The company has repair shops in New Jersey, Pennsylvania, Ohio, Illinois, Louisiana, Texas, Nebraska, Kansas, California, Washington and in other states.[9] These shops repair upwards of 20,000 tank and 4,000 wood cars a year. With one of its repair plants alone—the General American tank car shop at East Chicago (Plant #2)—servicing between 4,000 and 5,000 cars in a single year, the technique of making repairs is highly developed. Methods discovered in one General American plant are passed on to all others. Much shop equipment is standardized, and servicing a fleet of 55,000 cars plus a number of cars owned by customers (railroads and shippers) in effect becomes one combined operation.

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[8] *Principles of Economics,* 3rd edition revised (1921), volume 1, Chapter 4.

In this activity, the purchase of parts[10] is enormously facilitated by the large quantities in which orders can be placed. As Alfred Marshall remarked many years ago, an increase in the scale of industrial production gives rise to two sets of savings: the "internal" economies that arise from sources, such as Taussig's pole illustration, *within* the plant; and the "external" economies that result from larger scale operations *outside* a producer's plant, in other industries with which he has dealings.[11] In this second set of economies, General American enjoys benefits that can be shared with the customer simply because the purchases for all its car repair shops are made or directed from Chicago, where buying policies and practices are centralized for the entire organization. Instead of buying a half dozen sets of brakes or draft gears for one small shop, General American can buy a hundred or five hundred sets at a time for all its shops. These purchasing policies are discussed in Chapter VIII; but it is here both essential and appropriate to point out that one of the chief economic reasons underlying the character and cost of General American's service to lessors, and other customers, is the very scale on which such service operations are conducted.

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[9] A list of shops appears on pages 114–15.

[10] Discussed further in Chapter VIII.

[11] See A. Marshall, *Principles of Economics*, first edition (1890), pages 374, 506, 523.

CHAPTER III

DEVELOPMENT OF CAR MANUFACTURING

1. *Original and Present Facilities*

BEGUN as a car leasing company in 1898, General American soon found that it required certain manufacturing plant and equipment in order adequately and economically to repair its own cars, to replace its cars as they wore out in service, and to add cars to its fleet, over and above normal replacements, as business grew. From this it was but a step to the building of new tank and freight cars for outside customers.

The original "shop" was a small piece of track at Racine Avenue (then called Center Avenue) and West 45th Street in Chicago. The facility had room for four cars. Here William Knorr, Oscar Carlstrom and three other men made the repairs on the original fleet. In 1907, the arrangement with the Graver Tank and Boiler Works on Railroad Avenue, in East Chicago, Indiana, as described in Chapter I, was consummated; and for three years General American carried on its plant activities as a tenant of Graver's. Then, in 1910, five acres of land were acquired on Euclid Avenue in the Calumet section of East Chicago and a wooden shed was erected. At the end of the year, the investment in this property—land, building and equipment—was $26,362. During the year, a total of about 50 men were employed; something like 1,200 cars had been repaired; and 59 new ones had been built in this plant.

From this humble beginning have developed General American's present manufacturing facilities. At East Chicago, in 1947, the company's total investment in all manufacturing plant and equipment at cost is approximately $15,750,000 and after depreciation, about $8,570,000. Its East Chicago properties now employ about 3,000 men. In these plants, during 1947, there were repaired more than 5,300 tank, refrigerator and other cars; nearly 6,000 new railroad cars were built; 481 Aerocoach motor buses were made; and various plastic products were also manufactured. The plants at East Chicago now occupy 197 acres; in the car plants alone are 22 miles of track.

In 1947 also, the Sharon, Pennsylvania tank plant repaired about 1,150 cars, built several hundred new ones, and fabricated a great multiplicity of steel and alloy plate and welded products, as well as stationary tank roofs, pressure vessels and numerous pieces of industrial process equipment. As with East Chicago, more new cars would have been built had more materials—especially steel—been available. In the plants at Sharon there is a present investment of more than $5,500,000 before, and of about $2,750,000 after, depreciation. Approximately 1,850 men are employed on the 126-acre properties.

Beside these two major groups of plants at East Chicago and at Sharon, General American operates 22 car repair shops scattered throughout the country. These shops, although they do not build new cars, carry on what is essentially a manufacturing activity: they rebuild many cars just as do the East Chicago and Sharon repair plants, although not all of the smaller shops are equipped to perform complete rebuilding jobs; some perform "light" as distinguished from "heavy" repairs. These General American car shops are so distributed, between the Atlantic, the Pacific, and the Gulf of Mexico, that for both General American's fleet and its customers' cars they make repair service available in close proximity to the spot where the need for repair develops. In whatever general region the car may be operating to meet the immediate seasonal or geographical need for transportation equipment, there is a repair plant to keep it running. Locations of these shops are shown on pages 114–15. In the aggregate, the shops repaired 24,790 tank and other cars during 1946.

The present chapter will be devoted to an account of the development of these several production facilities, with major emphasis upon activities connected with the building of new cars and machinery at East Chicago and Sharon—including Warren, Ohio, which was the Sharon tank car plant's predecessor.

2. *East Chicago, 1910–46*

Wilfred Hennig and Oscar Carlstrom recall that in 1910 about 50 men were employed in the wooden shed at Euclid and Parish Avenues. The plant and its environs were so rudimentary that at the east end of the shop, in a slough about twelve feet deep, the men spent part of their noon hour fishing.[1] No roadways ran into the property; teamsters who delivered materials frequently got stuck in the sand and mud. Carlstrom and his carpenter gang accordingly built a wooden road by leveling the ground between two railroad tracks and using the end sills, that had been removed from old tank cars, for surfacing.

Machine equipment was largely limited to hand tools and hand riveters. A force of about 200 men, in 1913–14, drilled holes one at a time in steel car sills, moved materials around the shop by hand and barrow, "except that a few small air hoists served to handle the larger pieces . . . In the absence of locomotive cranes and switch engines, cars were moved about by pinchbar and push."[2]

Initially, General American contracted with outside builders like Graver for the tanks themselves and then, in its own shop, mounted them on frames and axles. The next step was to purchase tank sheets, entirely fabricated, and to assemble these into the tank in the General American shop. The third stage, for which the company was ready in 1915, was to buy merely the plate from the steel mills and, with mechanical punches, shears, rollers and flanging machines that were installed in 1914–15, to fabricate the entire tank.

In 1912 and 1915, additional plots of land adjacent to the plant were acquired, and in 1916 the "big tank shop" was erected. This was General American's first modern steel building, and contained the first overhead cranes installed by the company.

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[1] Harry Brown, safety engineer at the plant, is authority for this report on the piscatorial aspects of early General American production. Mr. Brown's memorandum on early East Chicago history has been of substantial aid to the present writer.

[2] From a manuscript by the late David T. Rosenfeld, the corporation's former director of engineering, written April 24, 1926.

This equipment greatly altered production methods. In years prior to 1916, tank underframes had been assembled as bench work and then lifted on to the trucks. The tanks were assembled on wooden horses. Just before the big steel shop was put up, the riveting of tanks was accomplished by laying the first plate on top of a roller, then fitting on the sheets and revolving the tank to reach the different positions. The photographs on pages 148–49 will make clear the nature of riveted tank design. But with the new steel shop, the bottom plates were put on heavy timber skids and the tanks revolved to their several successive positions by the overhead cranes. This improvement paved the way for a still greater innovation: the use of a progressive assembly system.

This development came about chiefly through the efforts of a man who came to General American from Columbus, Ohio, in 1918, Jesse G. Penwell. At first track foreman, then general shop foreman, he later became plant manager. Rough, tough, lovable and ingenious, Penwell was the incarnation of energy and picturesque language. He was both a driver and an organizer. Says Harry Brown, "The old timers declare that if an order were received today, Mr. Penwell wanted it built yesterday."

Penwell installed the first progressive assembly system for tank manufacture at East Chicago a year after he came. The assembly line was about 400 feet in length. It consisted of a succession of iron stands about two feet, 8 inches in height, fitted with wheels that served as rollers on which the tank could be pushed along the line from one set of assembly operations to the next. Ten or twelve tanks would be on the assembly line at one time. About 20 complete tanks would come off the line in a 9 hour day. While the time required for different tanks to go through the different stages was about the same, the number of rivets driven by one crew might differ from that driven by another crew depending upon the complexity of the work. Time allotments were compensated by varying the size of the crew, so as to permit a steady flow of tanks on the line. Two of these lines were installed at the same time, having a total capacity of 40 tanks. This system was continued at East Chicago until 1927, when General American's tank operations were transferred to Sharon. The new progressive method approximately doubled the output and at the same time required about 20 per cent fewer men in the assembly operation.

The idea of progressive assembly itself was not original with Penwell—about 1913 it had been adopted in the automobile industry both by Willys-Overland and Ford. But its application to heavy tank car manufacture was a product of Penwell's great drive and ingenuity. Its inauguration represented largely the triumph of an idea; its development involved a new method of organization rather than the provision of new machinery; in fact, the only pieces of new equipment specifically called for were the steel stands and rollers.

By 1920, the plant was a bee-hive of activity. Penwell was general foreman, L. A. Lenhart was plant manager, and O. J. Parks was general superintendent of the company's car manufacturing activities, with his office at headquarters in Chicago. Max Epstein, who was then president, was spending the summer in Europe, but even on a vacation could not keep his mind away from what was happening at East Chicago. A letter he sent to Parks, dated August 25, 1920, at once illustrates the constant surveillance which General American's founder exercised over the enterprise and also serves to indicate some of the events at East Chicago in mid-1920:

> Hotel Adlon
> Berlin
>
> Dear O. J.
>
> I have been hearing from various sources about your many activities and am sure you all had your hands full this Summer. On my return about September 28th, I expect to see the most wonderful car plant in the world!
>
> I hope especially that the drinking water system is working.

Fire Protection

If the new system has been installed, why not try a day and night surprise alarm and see how it works? We must give serious thought to proper fire protection, as it would mean much if anything happened now.

New Press

Has this been installed? Had you better not give further thought to whether it shouldn't be at the east end of the tank shop, for the reason that most of its work will be fabricating tank heads?

Arch Bar Machinery

Remember that when we get into the Union Tank Line cars,[3] and later on, we will build a large part with side frames, so don't load up on a large arch bar capacity.

I hope that the grey iron foundry will soon be going.

Tell Hugo to have the road continued through to Plant 2. Nothing we ever did at the plant to make it *look* right was so effective as the road, so let's continue it.

Tell Lenhart that I appreciate his efforts as I do yours. I hope that all your family have been well and that you have had a fine summer.

Our trip has been great! Germany looks fairly good—there's plenty to eat, but prices are high.

Best regards all around.

M.E.

Freight cars were built in a comparatively small way, in this shop in 1917–19,[4] but General American's real decision to enter the freight car field was made in 1921. Tank car production capacity, built up during the first world war and in the post-war expansion period of 1918–20, was too large for depressed business conditions during the years 1921–22. It therefore seemed advisable to attempt to obtain more freight car business. Wood car (chiefly box car) operations were begun in 1921. A modern wood car shop standing on Euclid Avenue across from the original tank car plant is now the outgrowth of these early efforts.[5]

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[3] A large building order received from the Union Tank Line, then a Standard Oil subsidiary.

[4] Gondola cars had been built for the Chicago and Alton Railroad and for export to the Pekin and Mukden Railroad, and a few stock cars for the Chicago and North Western Railroad.

To the development of the freight car branch of the business, many men have contributed; but two among them may here be mentioned specifically. The leading "shop" man was Charles E. Pooler, who became its general foreman in 1923. He remained with the company until his death in 1942. The "downtown" executive responsible for freight car production and sales policies was LeRoy Kramer. With a broad background of railroad experience, Kramer came to General American as a vice-president in 1925. The skill, understanding and patient tolerance that he brought to the task of knitting together an organization were marked; the esteem in which he was held by his associates has been already noted in Chapter I. Kramer became first vice-president of General American in 1935, and in 1946 retired. He now serves the company in a consulting and advisory capacity.

It was in 1924–25 that General American really learned to make freight cars effectively. When the decision seriously to enter this field was made, no great manufacturing difficulties were anticipated. But as in most engineering and business endeavors, an ounce of specific practice and experience was found to be worth a pound of general parallels and assumed analogies. Freight cars were railroad cars, yes; but tank car experience was not freight car experience. Mistakes and severe losses accompanied the first efforts to produce in quantities; facilities, equipment, materials and labor were available but the indispensable ingredient of skilled technique—what in the second world war came to be called "know-how"—was lacking. This element was supplied after Lester Selig brought LeRoy Kramer into the company.

The old-timers at East Chicago like to recall one day in

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[5] The word "original" is used because all General American tank car production, as will soon be stated, today takes place at Sharon.

1924 when a record was reached for the number of cars shipped. In a way, the figures for that day, April 8, are misleading because the cars completed and shipped on a particular day are not "made" on that day; as with most industrial processes entailing the fabrication and assembly of many component parts, the production process had been begun long before.[6] None the less, to see so many cars go through the final operations on the assembly lines and emerge from the inspection sheds was exciting, and the record day was celebrated by Mr. Selig in the following letter written to the plant manager:

Chicago
April 10, 1924

MR. HENRY DONOVAN
General Manager
GENERAL AMERICAN CAR COMPANY
EAST CHICAGO, IND.

DEAR MR. DONOVAN:

I have before me the report of April 8th in which it is shown that 76 units were produced from the steel car production tracks and 93 wood cars completed in a single day.

On behalf of the President I wish to congratulate you, Mr. Penwell and the shop organization on this exceptionally fine showing which is a record for our shop and, if I am not mistaken, is a record for any freight car building shop.

I hope that you will pass along this message of congratulation and appreciation to the men in the shops who made this record possible, at the same time expressing our confidence that the present organization, other things being equal, will always obtain the maximum production.

FOR THE PRESIDENT,
Lester N. Selig
Assistant to President

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[6] This is true even in the highly rapid processes of manufacture like modern automobile production, where a motor car may be "made" in 30 minutes in the sense of being bolted together but where the work of fabricating the component parts and grouping them into sub-assemblies has in reality taken days or weeks prior to the act of final assembly on the "line."

The East Chicago plant has had several general managers or superintendents. Some, like Penwell, were extraordinary production men, some were not; nearly all have been colorful. A brief capitulation is historically in order.

From 1907 to 1911, one Dan Jones[7] was the East Chicago shop manager; he was, from 1907 to 1910, in charge of General American operations at the Graver Tank and Boiler Works. Pay day, every other Friday, was quite an event. Instead of paying the men, of whom there were about 30, at the plant, disbursements were made by Mr. Jones at Brick Bailey's Saloon, on the corner of Todd and Chicago Avenues, about a block away. Here the men received and cashed their checks and it is reported that the boss was paid off with a beer by each.

In 1911, the task of dispensing with the services of Mr. Jones fell to C. A. Shoemaker, who was then general superintendent of the company's manufacturing operations. Apparently Mr. Shoemaker had little relish for the task. A letter was written advising Mr. Jones that his services were no longer required and enclosed was a check for a month's pay. Mr. Shoemaker, with the letter in his pocket, went to East Chicago to visit with Mr. Jones. They spent the entire afternoon together but Mr. Shoemaker made no reference to the specific reason for his visit. Finally, when Mr. Shoemaker was ready to return home, Mr. Jones walked him to the street car and as the car approached, Mr. Shoemaker reached in his pocket, took out the letter, and as he boarded the vehicle, said, "By the way, Jones, here's a letter I have for you." Thus was Mr. Jones separated from the employ of General American.

J. P. McNally succeeded Jones and served from 1911 to 1916. N. A. Alquist was manager in 1916–17, E. S. Way in 1918–19, and L. A. Lenhart in 1919–20.

Jesse Penwell served as manager in 1920–21, John E. Tesseyman in 1922, and Henry Donovan in 1922–26.

In 1926, Thomas A. Mathieson became manager, and with keen sagacity and extreme effectiveness, has continued in the position until the present day. George L. Hansen, who has been with the company since 1929, is general superintendent; and Carl H. Brinckmann, who boasts a seniority date of 1919, is the assistant general superintendent.

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[7] For the characterization of Jones, I am indebted to Mr. Wilfred R. Hennig.

The output of tank cars at East Chicago, from 1922 to 1927, and of freight cars there, from 1922 to 1947, is shown in Chart 6. For earlier years, precise production or shipments data are not available; a tabulation of building orders received gives the nearest possible approximation.

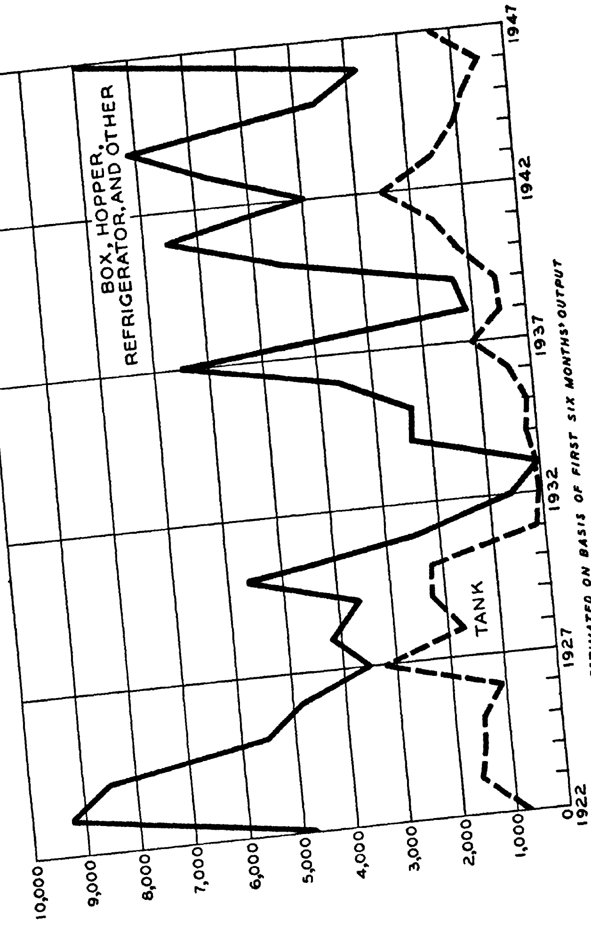
Photographs of certain types of cars produced, together with pictures of machinery and production methods at East Chicago, appear on pages 134–52. Some of the General American contributions to the art of tank car engineering have already been discussed in Chapter II. A table of manufacturing and engineering achievements in the art of car building, for which General American may take credit, appears on page 116.

As in all large enterprises, the cooperation of numerous persons is responsible for product improvement and innovation; but in the development of General American tank car engineering, several names should particularly be mentioned even though space prevents naming many others who worked with them. One is O. J. Parks, who came from the Pennsylvania Railroad in 1915 and was General American's general superintendent following C. A. Shoemaker. Inventor of the Parks valve and numerous other component designs, Mr. Parks has spent 32 years in General American's service and is now an adviser to the vice-president in charge of manufacturing. Another is David Rosenfeld, who started at East Chicago in 1908 and spent several years in charge of the company's engineering department when it was later located at Sharon. He died in 1935. Rosenfeld was followed, as chief engineer, by R. C. Pierce. The fourth man whose engineering contributions over the years have been too many to count is Rea W. Thompson, who had been with Standard Tank Car Company before General American took it over. He is now General American's director of engineering with headquarters at Chicago.

CHART 6

TANK AND FREIGHT CARS PRODUCED, 1922-1947▲

NUMBER OF CARS



▲1947 FIGURES ESTIMATED ON BASIS OF FIRST SIX MONTHS' OUTPUT

3. *Warren and Sharon, 1907–46*

From its start, East Chicago repaired, serviced and built cars in the Chicago and mid-western territory, but the General American car line also needed a repair and manufacturing base further east. At Warren, Ohio, near the Ohio-Pennsylvania boundary, was a plant similar to Graver's: the Warren City Tank and Boiler Company. With this company, General American effected an arrangement for rental of space similar to that worked out the same year (1907) with Graver in East Chicago. In the early years with Warren City also, General American arranged for the boiler works to build the tanks which it mounted on its cars.

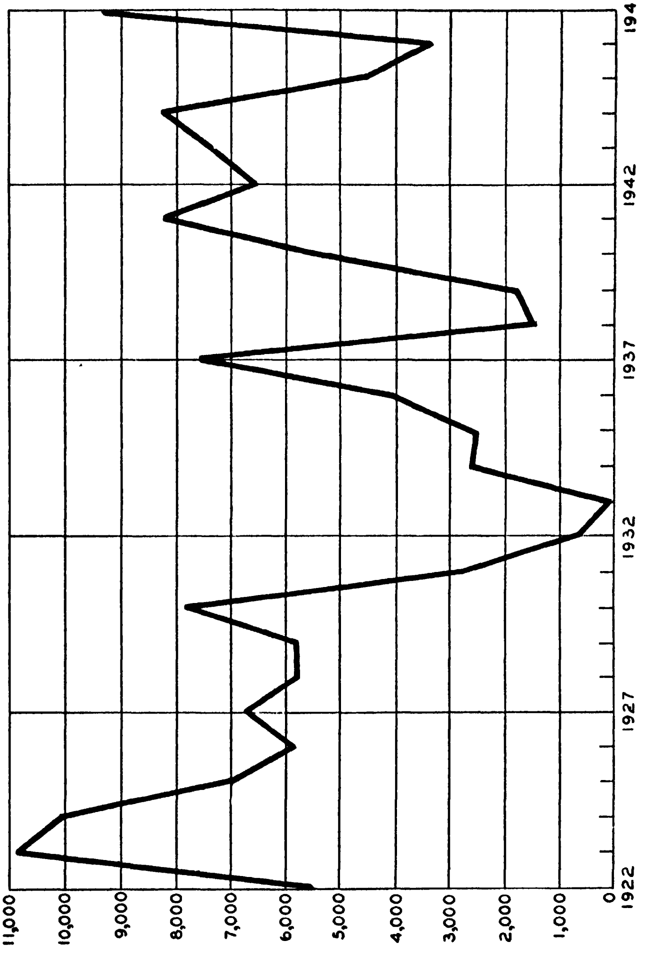
In the first year of operations at Warren, orders were booked for 159 new tank cars. Of these, 70 were for General American's own fleet and 89 were for outside customers. Among these customers were the United Gas Improvement Company of Philadelphia, the National Carbon Company of Cleveland, the Farmers Oil and Fertilizer Company of Dawson, Georgia, and Marden, Orth and Hastings of Boston. Two orders were for one car each; the largest order was for 25 cars. This was for the Higgins Oil and Fuel Company and embraced cars of 10,500 gallon capacity, with 40 ton trucks. The price was $1,369 each, or a total of about $34,000. For General American, in its first year of manufacture, this was a huge order. Had its officers then been told that the day would come when individual orders would be received involving 2,000 cars for one customer, they would not have believed any such prophecy. Chart 7 shows total car production at both plants since 1922.

In 1915, the Warren City Tank and Boiler Company built a new plant for itself, and General American took over the old one that it had partly occupied, as a tenant, since 1907. This was the first Eastern plant that General American owned, and served as a repair and manufacturing headquarters until 1927.

In 1927, the Warren plant was sold and a newer, specialized tank car plant approximately 15 miles to the east, at Sharon,

CHART 7

TOTAL NUMBER OF CARS PRODUCED: TANK, FREIGHT, AND OTHER, 1922-1947▲



▲1947 FIGURES ESTIMATED ON BASIS OF FIRST SIX MONTHS' OUTPUT

Pennsylvania,[8] was acquired. This facility, in size about 45 acres, had been owned by the Standard Tank Car Company, a concern started by Woodsmith,[9] which was bankrupt. General American re-equipped and enlarged the plant, and soon after its acquisition, it was repairing and building between three and four thousand cars a year. Some idea of the equipment now used in this plant may be had from the photographs on pages 148–50.

Warren and Sharon have been blessed with a continuity of excellent production management, more free from the ups and downs of some very able and some less able men that have characterized East Chicago. This is largely because of the fortunate choice of a foreman made by Max Epstein. On the recommendation of C. A. Shoemaker, Mr. Epstein obtained Fred W. Klippert to head the Warren shop in 1910. Klippert, then 35 years of age, had been successively machinist, inspector and contract car supervisor for the Pennsylvania Railroad. He was at Warren inspecting a tank car for the Railroad when he met General American officials. When the subject of coming with General American was broached, Klippert was quite undecided. The Warren shop had built 500 cars in 1910, but it employed only about 50 men and seemed like a pigmy in comparison with the Pennsylvania, which was the country's largest railroad. Mr. Epstein, however, wrote Klippert a persuasive letter, stressing the company's future and the advantages of association with a growing enterprise. Klippert, accordingly, took his chances. The transition from the atmosphere and equipment of the Pennsylvania Railroad shops was great. General American had in the Warren plant at the time only one air compressor and a few hammers. It acquired no punch press for two or three years. A punch press at that time cost approximately $350.

Klippert has been with the company for 37 years. He is now superintendent of the Sharon tank plant. He attributes the company's success to sound financial management[10] and to the continuity of its executive management. Supervisory personnel in General American, he says, feels a certain security. Promotions are made from within; the management's treatment of employees, in his words, attempts to be "fair and just." Klippert cites, as one evidence of this, the fact that he never has had to ask for a raise in salary; the increases, he says, just came.

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[8] A portion of the property is in Masury, Ohio; the Ohio-Pennsylvania line runs through it.

[9] Who also founded the Quaker City line; see Chapter II.

[10] See page 23 above.

The present executive staff at the Sharon tank car plant includes James S. Frey, who is manager of all Sharon facilities;[11] H. E. Rogner, manager of the tank car division; A. O. Miller, manager of the plate and welding division; Fred Klippert, superintendent of the tank car plant; and Arthur W. Priebe, superintendent of the plate and welding plant.

Chart 8 shows the orders and shipments of new tank cars from Sharon from 1927 to 1946, and the annual number of cars repaired there.

Tables A and B show the car orders received in 1907 at Warren, by customers, and those received at East Chicago thirty years later. While the earlier year tabulation is for tank and the later one for freight cars, the differences in the size and distribution of individual orders are of interest.

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[11] See the section below on plate and welding and other Sharon activities.

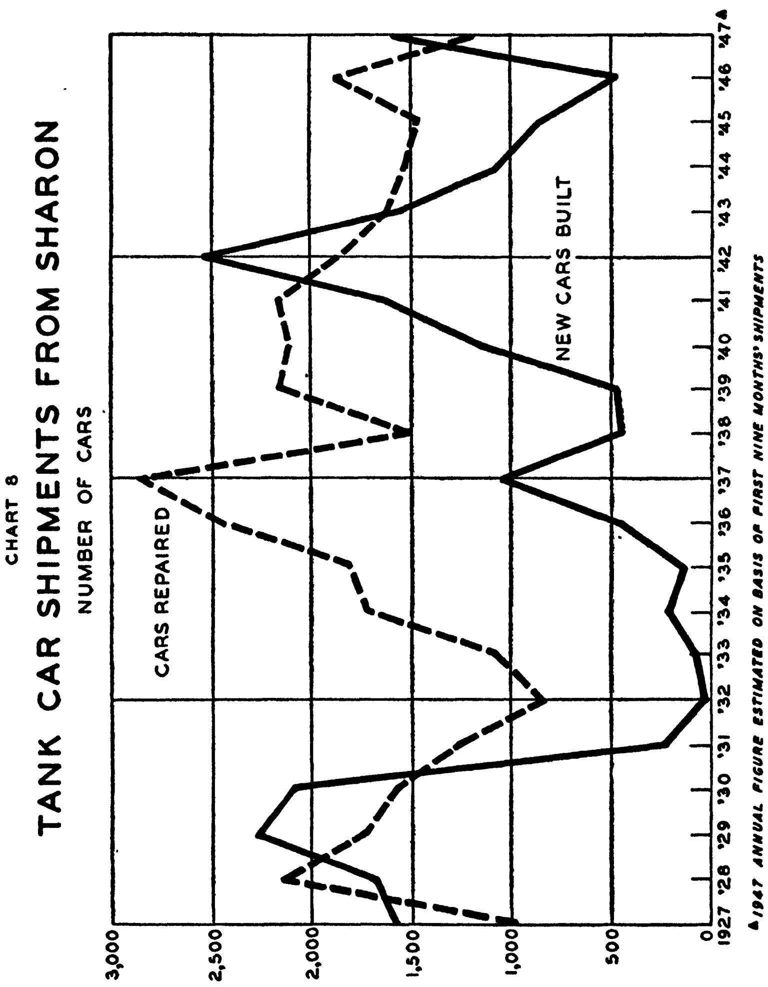

CHART 8

TANK CAR SHIPMENTS FROM SHARON

NUMBER OF CARS

ᵃ 1947 ANNUAL FIGURE ESTIMATED ON BASIS OF FIRST NINE MONTHS' SHIPMENTS

TABLE A

CAR BUILDING ORDERS AT WARREN, OHIO, IN 1907

Customer	Number of Cars	Price per Car
United Gas Improvement Co.	6	$1425.00
Farmers Oil & Fertilizer Co.	4	1375.00
Fidelity Oil Co.	10	1325.00
Fidelity Cotton Oil & Fert. Co.	10	1375.00
Wood Products Co.	15	1325.00
Higgins Oil & Fuel Co.	25	1369.54
National Carbon Co.	2	1425.00
Fernwood Lumber Co.	2	1325.00
Marden, Orth & Hastings	1	1340.00
Steinhardt & Co.	1	1300.00
Wood Products Co.	10	1150.00
E. H. Young	3	1250.00
Total	89	

TABLE B

CARS SHIPPED FROM EAST CHICAGO IN 1937

Customer	Type of Car	Number of Cars
Illinois Central	Refrigerator	800
Southern Pacific	Automobile	825
Kansas City Southern	Box	300
Swift Refrigerator Line	Refrigerator	450
Chesapeake and Ohio	Box	500
Illinois Central	Hopper	100
Pacific Fruit Express	Refrigerator	500
Atchison, Topeka and Santa Fe	Gondola	25
Chicago and Eastern Illinois	Box	500
Minnesota and St. Louis	Automobile	10
Mars, Inc.	Sugar Hopper	1
Union Refrigerator Transit	Refrigerator	35
Atchison, Topeka and Santa Fe	Refrigerator	500
General American-Pfaudler	Milk	5
Atchison, Topeka and Santa Fe	Refrigerator	300
John Morrell and Co.	Refrigerator	100
Nickel Plate	Box	500
Atchison, Topeka and Santa Fe	Refrigerator	200
Illinois Central	Automobile	300
General American	Hopper	96
National Railways of Mexico	Box	175
Union Refrigerator Transit	Refrigerator	300
General American	Hopper	2
		6,524

CHAPTER IV

DIVERSIFICATION OF MANUFACTURING

1. *Plate and Welding*

IT HAS been remarked in previous chapters that until about 1925, General American's activities were restricted to the car leasing and building fields and in these fields chiefly to tank cars. In 1924–25, however, the nucleus of a modern refrigerator car fleet was added, a railroad freight car manufacturing program was launched, and a storage terminal system was established. Since that time, steps toward further diversification have been taken whenever prospectively profitable opportunities have arisen. The corporation's plate and welding division, its process equipment division, the motor bus (Aerocoach) division, and the plastics division are all the outgrowth of this diversified manufacturing policy. The present chapter sketches the rise and the functions of these new divisions.

The plate and welding division is a natural complement of tank car activity at Sharon. Welded tanks had been used by General American in the manufacture of special cars—such as the chlorine car, built to withstand high pressure—for some time. At first these tanks were bought from plate and welding companies; later they were fabricated by General American in its own tank shop. Essentially, a car like that used for chlorine and similar gases is a pressure vessel mounted on an underframe, axles and wheels. Thus, the step from the manufacture of high pressure cars to large pressure vessels in general was a logical extension of previous activities.

The opportunity thus to expand came in 1940, when a chance to acquire the plant of the Petroleum Iron Works at Sharon, Pennsylvania, presented itself. "This large and modern plant," said Mr. Selig in the annual report to shareholders for the year 1940, "is located contiguous to your Company's tank car manufacturing plant at Sharon, and its business, among other things, of manufacturing special high-pressure tanks for tank cars, fits in with our business of manufacturing tank cars. In addition, the new plant manufactures a diversified line of welded steel products for sale to various consumers, such as oil companies, steel companies, chemical companies, shipbuilders, etc."

The property acquired covers more than 80 acres. In it are made pipes for the oil and other industries, caissons, smokestacks and large pressure vessels of all types. From small steel vessels and annealing covers to huge standpipes and towers, all sizes of plate and stationary tank equipment are now manufactured by this division. Vessels and towers that measure as much as 250 feet in length are built to the precise specifications of the customer for his specialized purpose. Bins for cement and lime, kilns for various uses, special tank roofs for the oil and chemical industries—"Wiggins vapor seals" and "HIDEK" floating pontoon roofs—are tailor-made at Sharon in Plant #2.

In the acquisition of the Petroleum Iron Works plant, General American took over certain key members of the predecessor organization, thus augmenting its own engineering staff with personnel already specifically experienced in plate and pressure vessel fabrication. Among these are Arthur O. Miller, now manager of the plate and welding plant, and B. R. Smith, chief engineer for plate and welding at the corporation's engineering department in Chicago.

2. *Process Equipment*

The plate and welding division was acquired just before the outbreak of the second world war. It geared itself intensively for war production, as stated in Chapter VII. So great was the division's expansion to meet the needs of defense production that the General American management saw that its capacity might well outstrip the peace-time demand for its normal products during the first few years following the close of hostilities. Accordingly, the company undertook a survey to determine what additional activities could be essayed to advantage in the plate and welding plant. In March, 1944, the results of this survey were briefly described (in the annual report for 1943) as follows:

> Your Board advised you last year that constant studies and analyses were being made to facilitate the transition of the Company from a war to a peace time economy, sometimes called "Post War Planning." One of the results of this effort has been the formation of a new division known as the General American Process Equipment Division, comprising, in addition to the Company's own extensive facilities at Sharon, which they will complement, three new acquisitions, well known companies in the process equipment field, the Louisville Drying Machinery Co., The Turbo-Mixer Corporation, Inc. and the American Machine Co. Further, your Company has made a part of this Division the Conkey organization, a leading sales engineering group, for years engaged in the design, engineering and selling of process equipment. This Division will engineer, manufacture and sell to the chemical, petroleum, food, paper and pulp, distilling and other industries, a wide range of processing machinery and equipment. Your Board believes there will be a great demand after the war for these types of products, due to many factors, including the use of new techniques and materials brought about by the war, and that your Company will share profitably in this field.

The companies acquired were chosen both to achieve the purpose of providing business for Sharon and to dovetail with one another in an integrated equipment effort: the design, engineering, sales and manufacture of process equipment. In organizing the new division, General American recognized that no one competitor offered to the customer a complete range of equipment for a unified battery of operations: agitators, thickeners, filters, evaporators and dryers. Yet since many customers require equipment for more than one of these processes, it is often of distinct advantage to have the chain of machines designed by one engineering organization. Hence the acquisition of the four companies; in the case of American Machine, only the designs and patents were acquired.

The Louisville Drying Machinery Company had a plant at Louisville, Kentucky, controlled by Arthur Lissauer, where it had for many years made equipment to recover wastes arising in the production processes of numerous industries. The economic importance of such waste recoveries can be shown by citing an illustration; the orange and grapefruit crop is merely one of many groups of products where Louisville equipment achieves substantial economies for canners and processors. In Florida alone, a single season's waste from these two fruits previously amounted to more than $2,000,000. With dryers and evaporators, this waste is largely recovered—the rind and pulp left over in the canning process are converted into cattle feed. In the canning of vegetables, in brewing, in fisheries, and elsewhere, valuable waste products are likewise recovered with the aid of Louisville dryers.

After drying and pressing the pulp and rind of citrus fruits, however, evaporators are used as a second step in the process of turning the waste pulp into a syrup having substantial food value. It is here that the concept of General American's process equipment division as a unified engineering service comes into play; Conkey evaporators provide the requisite equipment. Founded in 1923 as direct successor of a pioneer filter factory which was begun in 1901 (the Moore Filter Company), the Conkey organization brought into General American a group of experienced engineers, among them being Henry M. Hunter, now general sales manager of the process equipment division and P. B. Sadtler. Together with James E. Moul, president of the Turbo-Mixer Corporation, these men and others form a sales engineering group capable of analyzing the process equipment problems in the widest variety of industries.

The products of the division, besides Louisville rotary dryers, include Conkey filters and evaporators, Peterson filters, drum dryers (American Machine Company designs), and Turbo-

Mixers of all types—machines that agitate and mix batch materials of various kinds under controlled conditions. In the manufacture of alumina, the making of cement, the mining of coal, the production of starch, paper and abrasives, in the drying of sweet potatoes or the processing of synthetic rubber—in these and a host of other uses, General American process equipment is serving the national economy. From small units that are no larger than an ordinary barrel to huge contrivances that run the length of an entire factory building, these machines perform a myriad of functions. Not only for industry but for municipalities and governments, General American hydroseparators, filters, and sedimentation units throughout the world process, purify and conserve essential mineral, chemical and food materials.

A summary of the characteristics and functions of the several types of process equipment that General American engineers and manufactures may be concisely presented in the following terms: [1]

THICKENERS

Function: The continuous removal of the bulk of the water from a slurry (suspension of finely divided solids in a liquid), by means of sedimentation (gravity settling of the solid particles). A thickener is also used for washing purposes through dilution and settling. The machine consists of a center shaft or torque tube to which rakes of structural steel with automatic lift arms, to avoid stalling by obstructions, are revolved in a tank or basin. Thickeners are made in sizes ranging from 10′ to 400′ diameters.

Application: Ore, mineral, coal, cement, fertilizers, glass, clay, sewage, paper, pulp, chemical and other industries.

HYDROSEPARATORS

Function: The continuous separation between the "slimes" and "sands" of a slurry; i.e. to overflow a suspension of the finest solid particles in water, and sedimentation of the coarser particles.

Application: Ore, mineral, clay, fertilizer, and other industries.

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[1] Adapted from a statement prepared in 1947 by William J. Stebler.

DEWATERING SCREENS

Function: The continuous removal of free water from a fibrous or coarse solid by drainage on an endless conveyor, built of sieve sections or perforated metal plates.

Application: Food, waste, rubber, and other industries.

PRESSES—ROLL AND SCREW

Function: The continuous removal of liquid from a resilient material, which retains the liquid by absorption (no free liquid). *Roll Press*—consists of cast rolls either plain or rubber coated, spring mounted in cast iron frame under which material is passed on an endless perforated belt. *Screw Press*—consists of a variable pitch screw, contained in a cast housing, which operates against an end dam causing pressure on material to dewater.

Application: Whenever cheap mechanical removal of water or a solution is feasible prior to drying.

FILTERS—DEWAXING

Function: The continuous removal of slack wax from oil solvent mixture at sub-zero temperatures in a totally enclosed operation. Filtrate is pressured through filter medium on a rotary drum enclosed in a vapor tight vat and hood; wax is deposited on outside of drum, scraped and conveyor discharged.

Application: Lubricating plants of the petroleum industry.

FILTERS—VARIOUS

Function: The separation of suspended solid particles from a fluid by passage through a pervious membrane. *Rotary Drum Vacuum Filters*—consist of an evacuating rotating drum, covered with filter medium, on which solids form a cake, which is scraped off by means of a blade and continuously discharged. *Rotary Vacuum Disc Filters*—consist of multiple discs, mounted on a center shaft, on which material forms a cake on each disc, is scraped off and continuously discharged. *Rotary Hopper Vacuum Dewaterers*—used for fast filtering; consist of a series of hoppers mounted on a center shaft into which material is top-fed and automatically dumped.

Application: Mineral, cement, chemical, food, waste, and other industries.

EVAPORATORS

Function: The continuous concentration of a solution by evaporation of the solvent, generally through both heat and vacuum, with heating medium usually steam. In an upright cylinder (single or multiple installation constituting a complete evaporator system) a nest of upright steam tubes is placed, the liquid circulates around these tubes (naturally or through the action of the pump), and the vapor is condensed, creating a vacuum.

Application: Chemical, food, waste, steel, oil and fat, pulp and paper, and other industries.

ROTARY DRYERS

Function: The continuous removal of liquid (mostly water) from a solid by means of evaporation; i.e. through the effect of a heated medium (hot metal surface, hot air, hot combustion gases). In a rotating horizontal cylinder, provided with flights to produce showering of the feed for better contact, a current of heated air or flue gas travels, or heat applied to outside of cylinder, or heat applied through inside steam tubes.

Application: Used in mineral, chemical, paint, glass, plastic, ore, coal, petroleum, food, steel, waste, and other industries.

DRUM DRYERS

Functions: Especially suitable for thin slurries carrying suspended matter of sticky or unfilterable nature. On steam heated rotating rolls the water from a product fed as a thin film is evaporated, and the dried material is scraped off the roll with a knife.

Application: Food, pharmaceutical, and industrial waste to produce useful foods.

COOLERS

Function: To lower the temperatures of finely divided dry solids, through removal of excess heat by means of a cooled medium.

Application: Used with dryers before storage of the finished product.

TURBO-MIXERS

Function: The continuous or batch mixing of liquids with liquids, solids, and/or gases. This is obtained through specially designed turbines, acting like a centrifugal pump in a vessel or vat.

Application: Food, chemical, plastic, cement, paint, petroleum, sewage, mineral, rubber, and other industries.

TURBO-FLOATERS

Function: To separate finely ground minerals suspended in water, by evenly distributing air bubbles throughout the slurry, after the addition of certain chemicals.

Application: Mostly in the mineral industry, but some applications have been made in food and chemical industries.

Most of the installations not only are custom-built but involve large sums per unit. While a small individual turbo-mixer may cost only about $400 without the motor, a large dryer or mixer or separator may run to $10,000 or $25,000 or more. A causticizing plant installation may cost $190,000; a sedimentation system, $400,000. Between a third and a half of the sales of the division are complementary, that is, they involve more than one kind of equipment, thus justifying the original concept of a need for a unified and complete process engineering service. For this reason, as well as the fact that many units of equipment are physically huge items rigorously fabricated to exact specifications, about half of the sales volume of the division is in transactions of $50,000 or more each.

In creating the process equipment division, General American attempted, as we have said, to develop an integrated engineering offering that no one competitor could rival. Although this objective has been achieved, there exists substantial competition in the sale of individual types of machinery, be they dryers, filters, or other units. In the field of drying machinery, for example, the Buffalo Foundry and Machine Company (a division of Blaw-

Knox Corporation), the Struther-Wells Corporation, and the Davenport Machine Company all offer competing devices. In filters and evaporators, rival producers are the Oliver-United Filter Corporation, the Eimco Corporation, the Goslin-Birmingham Company, and the Swenson Evaporator Company (a subsidiary of the Whiting Corporation). In sedimentation equipment, competitive products are offered by the Dorr Company and the Hardinge Company, which latter concern also makes dryers. General American's especial contribution is thus not to offer a sole source of supply for any one general kind of machinery, but the *interrelated* designing, production and installation of integrated process equipment units.

3. *Aerocoach*

In earlier pursuance of the same policy of diversification, just before the second world war, General American purchased the motor bus business of Gar Wood Industries, Incorporated. No plant was acquired, but the designs of a new type of welded tubular frame bus, an inventory of parts and a core of experienced manufacturing personnel were obtained. Chief among the persons who came with General American was Richard Evans, who had been the superintendent at Gar Wood's. He became manager of the General American Aerocoach plant newly established at Hegewisch, Illinois, just outside Chicago.

When Evans came from Detroit, he brought with him 18 men. Production in 1940 was 58 coaches; in 1942, 240 units. In 1943, the war brought a stop to bus production; it was resumed in 1945. In 1946, 501 Aerocoaches were made, and in 1947 the division was moved to a new plant. The Hegewisch facilities were not owned by General American but used by arrangement with the Pressed Steel Car Company. The new Aerocoach plant, owned by General American, is at East Chicago, Indiana, about 1½ miles from its freight car shops. The plant covers 44 acres; it represents, with equipment, an investment of approximately $3,500,000; and it has a capacity of 1,500 to 2,000 coaches annually.

The distinctive feature of the Aerocoach is its tubular welded, single-unit body and frame construction for strength and safety. Made in both urban transit and suburban long-distance types, the coach is sold to numerous transit and bus lines, such as Santa Fe Trailways, Quaker Stages, National Trailways, Greyhound Lines, etc. Single coaches are large units, some selling for $15,000 or more.

The division's gross volume in 1946 was over $8,000,000. It now employs about 700 men—a figure that promises substantially to be exceeded in future years in the new plant.

The operating head of the Aerocoach division is Lloyd Gross, who has been with General American since 1923. Mr. Evans is plant manager; his assistant manager is Max F. Murry. The general sales manager is H. A. FitzJohn. A. F. Siers is the director of Aerocoach Engineering.

As with railroad cars, welded products and process equipment, General American has no monopoly of the field in motor buses. Competition comes from a number of larger and smaller producers. The larger ones are General Motors Corporation and the American Car and Foundry Company. Among the others are Flxible, Twin Coach, Beck, White, and Mack.

4. *Plastics*

The final step in diversifying General American's fields of activities was taken when the decision to enter the plastics field was made. In 1944–45, the Eclipse Moulded Products Company, of Milwaukee, a small plastics manufacturer, was acquired, and likewise McCoy, Jones and Company, of Chicago, a plastics products manufacturing and wholesale distributing organization. In 1946, plastics manufacturing was begun in a building of the East Chicago freight car plant; by 1947, over a million dollars' worth of equipment had been installed for plastics production. Sales of plastics products, in 1947, are at the rate of more than two million dollars annually.

These products consist of washing machine parts, plumbing supplies, trays, boxes, fan blades and a wide variety of items produced in quantities for mass markets. In some ways, the plastics field is as unlike the railroad car, the motor coach and the welded products fields as possible; in other ways, however, plastics production makes use of the same type of engineering talent, and chemical and physical knowledge, that General American personnel possesses in such abundance. It offers opportunities for innovation and profits in greater degree than the matured, more stabilized fields of tank and freight car manufacture, and in many respects should be less severely subject to the extremes of cyclical fluctuation. In any event, for better or for worse, it represents the General American management's forward-looking attitude: a discarding of tradition as such, and a willingness to try new ventures.

The manufacturing head of the plastics division is Richard Lamport, who reports to W. J. Stebler, the General American vice-president in charge of all manufacturing activities. The plastics sales manager is A. N. Williams, who reports to Frank E. Selz, assistant to the president. The McCoy-Jones Company, headquarters of which are in the Merchandise Mart, Chicago, is headed by Charles McCoy and Hugh Jones.

5. *Other Industrial Processes*

As a part of its diversified program, General American has acquired and developed patents on several novel methods of production. These acquisitions give the company an opportunity not only to sell rights to utilization of the methods themselves but also to manufacture and sell much of the machinery which their use requires.

Among these developments are patented means of refrigeration and of food processing. Perhaps the most interesting of these is the Malek method of processing rice, which saves food and results in a more nourishing product. Under this method, prior to the ordinary milling process, the rough rice is steam-treated and mechanically dried. It is processed at controlled temperatures in rotary steam-tube dryers, then cooled in rotary coolers. Louisville machines, designed and made by General American's process equipment division, are available to carry out these operations. The end results achieved by the Malek process are stated to be these:

1. Milled Malekized rice contains substantially all the nutritional properties of natural rice.
2. An increase of from 20 to 25 per cent in head rice yield is obtained.
3. The process sterilizes the rice so it is germ-free.
4. The cooking qualities of the rice are enhanced. The rice kernels are separated instead of being lumped in a gelatinous mass.[2]

The Quartermaster Corps of the United States Army, the Department of Agriculture and the National Research Council have all accepted this new method of increasing the available rice yield and conserving the vitamin B nutrients found in natural rice.

When General American first took over development of the process, the rice produced had all of the claimed nutritional qualities and also yielded a larger edible product per barrel of rice milled. Because its color was not as white as that of the usual "polished" rice, however, the Malek rice secured only a limited consumer acceptance. An experimental batch-type processing plant at Stuttgart, Arkansas, began operation in late 1946. Since that time, intensive laboratory work has resulted in a lightening of the product's color which, it is expected, will achieve all of the desired results. A new continuous process type plant has been built to replace the batch-type factory.

General American leases or sells outright this equipment—the soaking bins, pressure cookers, dryers and coolers—or it will license producers to adapt existing plants to Malek production. As rice is a commodity of world distribution and consumption, either the rights to employ the process, or the machinery, or both, have been sold in Argentina, Africa, Brazil, Colombo, England, France and Sweden. When General American furnishes the machinery for a plant installation, it sells the equipment outright with a royalty for each pound of rice produced.

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[2] Adapted from an article in the *GATX Digest*, June, 1947.

CHAPTER V

STORAGE TERMINALS AND PRECOOLING

1. *Inception of the Terminals*

IN 1925, General American owned two car manufacturing plants and several repair shops, but its business activities were entirely limited to car manufacturing and leasing. Except for the dual aspect of building and rental, and except for the fact that several different types of cars were made and leased, there was no diversification of activities whatever. The business was all in cars; no related or complementary fields contributed to either gross or net revenue.

The tank cars in the fleet, however, steadily plied the railroad tracks of the country in the direction of the seaboards, and hauled huge quantities of gasoline and petroleum oils destined for export. Similarly, they brought to inland points the various vegetable, fish and animal oils that were imported at Eastern ports or through the Gulf of Mexico. As part of these foreign trade movements, many of General American's tank car customers required warehouse facilities, located at marine shipping points, to handle their industrial liquids. The smaller oil companies sometimes had to use the private storage tanks of their larger competitors for this purpose; undoubtedly, thought the General American officials planning to embark on the terminal project, those firms would prefer to store with an independent noncompetitive agency. Beyond this, however, was the direct interrelationship of storage terminals and tank cars in terms of the generation of business by the one for the other; after the unloading and storing of an import shipment, the customer requires tank cars for its later distribution to inland points. The terminal, as a go-between in the transport of industrial liquids, is thus essentially the place where "the tank car meets the boat." [1]

Accordingly, Hugo Epstein, a brother of General American's president, in 1925, went to New Orleans to launch the new venture. General American had bought an old plantation at Goodhope, Louisiana, on the east side of the Mississippi. It consisted of 220 acres about 26 miles above New Orleans. The swamps were drained, a small town was created, and 19 storage tanks were erected. Docks were built so that ocean-going steamers could load and unload their liquid products, which were pumped either directly into tank cars or into storage tanks of varying types and capacities.

Hugo Epstein's enthusiasm was matched only by his organizing skill. From the start, the Goodhope terminal was efficiently operated and earned a profit. In 1929, about 800 more adjoining acres were added. More tanks were constructed. By 1930, the terminal that had begun operations in 1926, with a storage capacity of 8,000,000 gallons, had a capacity of about 45,000,000 gallons. "The General American Tank Storage and Terminal Company," proudly said an announcement of that year, "makes it possible to furnish, on short notice, suitable tankage for almost any commodity that will flow through a pipe line."

The terminal's gasoline and kerosene tanks had either water-top or insulated roofs, equipped with devices to reduce evaporation and to avoid explosion and fire hazards. The announcement further pointed out that the "tanks of 25,000 barrel capacity and over are stationed 300 feet apart and surrounded by dykes (firewalls), thereby obtaining lowest insurance rates. All tanks are aluminum painted, this having been determined the color of greatest heat resistance by the Bureau of Mines."

In addition to petroleum and gas oils, the chief groups of commodities stored by the terminal were coal tar products (toluol, benzol and water gas tar), blackstrap molasses, vegetable and other oils (cocoanut, palm, fish, cottonseed, etc.) and creosote.

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[1] I put this apt phrase in quotation marks because it was coined by Bennett Epstein for the chapter title of a book published by General American in 1931, "General American Tank Car Journeys: Where Industrial Liquids Come From and Where They Go."

The terminal discharges three principal functions. It loads and unloads ships and cars, transferring and pumping the cargo through its miles of pipe. It offers storage space for industrial liquids, and out of the stock of liquid so stored, any part of the supply may be withdrawn piecemeal. This flexibility permits shipment as the owner's factory may need the product, as the owner's customers may call for it, or when the market may offer a better price than at the time the cargo was brought into the country. Finally, if desired, the terminal will package the product for the customer: instead of his having to make bulk withdrawals, General American will barrel, drum, can and case his oil, wax, naphtha, turpentine, alcohol or other liquid for him, and send out the drums or cases as he orders them shipped. Thus the General American terminal and its filling plant in effect serve as a department of the customer's distribution facilities.

The commercial advantage of this facility to different types of customers was described in the Goodhope terminal's 1930 booklet[2] by reference to five specific clients in terms that apply just as well today as they did 17 years ago:

> *Clients A & B.* Each of two large exporting companies, shipping *Coal Tar Products,* leases its own individual tankage and carries permanent stocks for distribution. The companies can execute orders out of their tankage for cargo, part cargo, tank car or drum shipment. They maintain no employees, have no overhead, and make prompt shipment at only the small cost of storage and in or out handling.
>
> *Client C.* This customer had a contract necessitating tank car shipments, over a period of 6 months, to several places in southern territory. By utilizing our facilities, he could bring in a complete cargo, and distribute it in tank cars furnished by us. By saving in ocean freight rates, he could pay interest and our charges and then have an additional profit.

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[2] "Ready Reference Facts for the Handling of Bulk Liquids." The original statement has been condensed and adapted.

> *Client D.* This customer needed a branch warehouse, at a Gulf point, requiring an investment of not less than $100,000.00. We are taking care of all his stocks and shipments. His unit cost of distribution is 50% less than it would have been had he provided his own terminal facilities, and he can employ elsewhere the $100,000.00 capital that would have been a fixed investment in his terminal. Whenever he requires money for working capital, it is available against our warehouse receipts.
>
> *Client E.* A large importer, having factories distributed all over the Middle West and South, imports his raw material in cargo lots. He ships to our terminal, loads directly into tank cars all immediate requirements for his factories, stores the remainder and draws it as needed. Total storage charges are less than interest, taxes and maintenance cost would be if he had his own facilities . . .

2. *Expansion, 1931–46*

Under the imaginative and energetic leadership of Hugo Epstein, the General American Tank Storage and Terminal Company of which he was president[3] continued to grow. The little community of Goodhope prospered. The company had created a modern small town with homes and stores and schools. Auxiliary facilities were provided as they were needed, including a small hotel. Hugo Epstein was the proud president of the Goodhope Realty Company and the Goodhope State Bank. The Terminal Company became a recognized headquarters for southern export and import shipments of liquids; its warehouse receipts were negotiable instruments and prime collateral in financial centers the country over. Goodhope, a dismal swamp a few years before, had become the third largest port on the Mississippi.

So well had the idea conceived in 1925 worked out that a similar base was desired on the Atlantic. Accordingly, in 1933, a small terminal operated by the American Mineral Spirits Company, at Carteret, New Jersey (on New York Harbor) was purchased and its tank capacity enlarged. Like Goodhope, it possesses a container filling plant and all of the equipment and devices of a modern terminal.

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[3] The company was a wholly owned subsidiary of General American until 1938, when it became a division of the parent enterprise.

In 1934, another terminal was acquired at Corpus Christi, Texas; and in 1935, at Houston, a fourth was built and equipped.

In 1931, a small terminal was erected at Westwego, Louisiana, across from New Orleans. Near Goodhope but on the opposite side of the Mississippi, the Westwego terminal enables shippers to save the river crossing charge that would otherwise apply on railroad ladings coming into New Orleans from the southwest. It thus serves as a valuable adjunct to the Goodhope operation. Although the smallest of the General American terminals today, Westwego's capacity is as large as that of Goodhope's when the latter was first established.

During the second world war, the terminals division also managed, under contract, two Government-owned terminals in Florida, one at Jacksonville and the other at Panama City; this war activity is discussed in Chapter VII.

3. *Summary of Growth, 1925–46*

The total terminal storage capacity in 1926, the first year of actual operation, was 8 million gallons; in 1946 it was approximately 250 million. Gross revenue in 1926 was $63,015; in each year, 1944, 1945, 1946 it amounted to over $2,500,000. Although the gross revenues of the division never have exceeded about 6 per cent of General American's total business volume, the terminals have often earned as high as 8, 10 or 12 per cent of General American's aggregate profit. To cap the climax of a successful and well managed operation, a stroke of luck—for which neither Hugo Epstein, the terminals' founder, nor Jerome Selig, the terminal division's able head since 1938, was at all responsible—occurred in 1944: oil was struck on the Goodhope property, and wells are now in production.

In 1946, the "thruput", or amount of liquid pumped in and out of the tanks and pipelines, was 20,071,647 barrels. Capacity of the five terminals and their comparative sizes are as follows:

TERMINAL	Capacity Barrels (*in thousands*)	Capacity *% of Total*
Corpus Christi	1,945	31
Carteret	1,625	25
Houston	1,350	21
Goodhope	1,188	19
Westwego	275	4

It will be observed that Goodhope, although handling an enormous volume of lading, now accounts for only about one-sixth of the total capacity and is surpassed in size by three of the more newly established storage centers.

4. *Organization and Personnel*

The original head of the terminals, Hugo Epstein, retired in 1938 and died in 1942. His capable second in command, Jerome S. Selig, became a vice-president of General American and took charge of the terminals division. Selig's administrative assistant is Joseph N. Cordell, whose office, like Jerome Selig's, is now in Chicago. The Eastern sales manager, with offices in New York, is Howard Westfall.

In the General American office in New Orleans, Miss Honora Starkey, who was in charge of the general office in the early days of the venture at Goodhope, recalls the pioneer days of the terminals enterprise. William F. Besselman, the original superintendent, died in 1941 and was succeeded by Fred J. Plattner. With his headquarters at Carteret, Mr. Plattner is now general superintendent of all terminals.

The superintendents of the five terminals that report to Mr. Plattner are as follows:

Goodhope: G. J. Cassard
Assistants: L. D. Walters
W. J. Wetzel
A. V. Reimer

Carteret: E. J. Dolan
Assistants: Harold Huber
M. F. Rumery
Corpus Christi: Arthur J. Besselman
Assistants: J. G. Giles
Dennis Jarrat
R. J. Isaac
Houston: W. A. Buckner
Assistants: A. O. Forbes
J. W. Buckner
Westwego: W. H. Besselman

5. *Precooling*

The headquarters of this rather unique division are at West Los Angeles, California, about 15 miles from Los Angeles. Here, in its own shop, is built refrigeration equipment which is used in California and other fruit and vegetable producing states to cool fresh produce after it is placed in railroad cars, prior to shipment. With the car temperature reduced to as low as 40 degrees Farenheit, the fruit and vegetables arrive at their destinations fresh and unspoiled.

The division serves about 200 customers a year and handles 25,000 carloads of produce. Since 1944, its annual gross volume has amounted to approximately half a million dollars.

The precooling equipment manufactured at the West Los Angeles plant is utilized at shipping points in California, Arizona, Florida, North and South Carolina and Georgia. Fruits and vegetables are brought in from the fields, packed in crates or boxes at the packing sheds, loaded into refrigerator cars and then General American Precooling equipment, which has been placed adjacent to the doors of the refrigerator cars, circulates cold air throughout the car. By the removal of the field heat, rapid deterioration of the product is thus prevented. Like the storage terminals, the Precooling Division carries on a servicing activity, for the car cooling equipment built in the Los Angeles shop is not sold but built only for the Precooling Division's own use. Charges for the precooling service are made on a per car basis.

The General American Precooling Corporation was established in August, 1935. The amount of equipment used at the beginning was very small, but gradual expansion took place. Today General American Precooling operates, in California alone, about 60 pieces of refrigeration equipment of various types, having a capacity of 20 to 100 tons of refrigeration per piece during a 24-hour period. In Florida, at Orlando, the division uses about 20 pieces of equipment, each having about 25 tons of refrigeration capacity.

During the second world war, the shop in Los Angeles engaged in war work, manufacturing plane parts for several companies in the aircraft industry in the Los Angeles area. When the war was over, it was decided that the Los Angeles shop should engage in the manufacture of some other item than precooling equipment, as precooling equipment merely required the shop's facilities approximately four months of the year. A contract was therefore made with a sales organization having certain patents on vending machines, and the Los Angeles shop has now started production of vending machines for dispensing bottles of soft drinks. The division expects that the gross volume of business on vending machines may shortly amount to a million dollars per year.

The Precooling Division has likewise manufactured and sold a small amount of refrigeration equipment to outside cold storage plants. Thus, while primarily a service agency, the division is to this extent engaged in manufacturing for others.

The division owns and operates a cold storage plant at Ukish, California. This plant is utilized for cooling pears in cooling rooms; the fruit is held in these rooms about three days before being loaded into cars. Branch offices of the division are maintained in Orlando, Florida; Lodi, California; Sanger, California; and Woodlake, California. It has temporary offices at many other spots during the season, for its equipment is portable and follows the crops. The produce cooled includes virtually all deciduous tree fruits, grapes of all varieties, citrus fruits, celery, lettuce, carrots, tomatoes, and melons of all kinds.

In 1946, the Precooling Corporation was consolidated with the parent company, becoming a General American division. The same organization and operations personnel continued to function. The head of the division is L. J. Ferderber; Harry Y. Stebbins is general sales manager, and Harry M. Mangels, district manager in charge of northern California, with headquarters at Lodi. Harlan Thompson is plant superintendent; J. G. Wallace, district manager of Florida with headquarters in Orlando; S. H. Coleman, general field superintendent; and E. A. Shulze, construction superintendent. Other names of personnel appear in the list on pages 158–70.

CHAPTER VI

FINANCIAL HISTORY

1. *Principal Incorporations*

MOST of today's large American corporations started with small capitals and expanded them through the reinvestment of earnings. The Ford Motor Company, for example, began operations with an investment of $28,000 which was supplied by twelve men. Its entire net worth stems from this original investment. In one respect, however, the Ford Company is unique—it is the only huge enterprise in which no stock has ever been sold to the public even at a later date. Apart from the fact that the Ford family has continued to hold virtually a 100 per cent ownership, however, Ford is much like other big enterprises that have grown from small beginnings: expansion took place because the early owners and managers exercised restraint in paying dividends, and kept in the business a large share of the profits which were earned. Had an "undistributed earnings tax" been in force during its early days, it could never have experienced such a development.

General American followed this same pattern of capital growth. From 1898 to 1916, cash withdrawals in the form of dividends constituted a minor proportion of total earnings, probably even smaller than with most other American enterprises which enjoyed similar expansion. Indeed, after the first public offering of stock in 1916, no common dividends at all were paid until 1919 in order to safeguard certain sinking fund provisions for the preferred issue.

The financial history of General American may for convenience be divided into four sections: incorporation of principal parent companies; principal acquisitions; funded debt; and the growth of stockholders' investment, earnings and dividends.

The first company, the Atlantic Seaboard Despatch begun in 1898, was unincorporated. The German-American Car Company, which took over its assets as related in Chapter I, was incorporated in 1902 in West Virginia, with an authorized capitalization of $50,000. The company soon found that it required further funds and borrowed money on short-time notes from certain packing firms that were its customers. At a directors' meeting held June 10, 1903, for example, it was resolved that

> WHEREAS it appears that this Company can, by a second mortgage upon certain of its cars, procure the sum of $12,500 from the National Packing Company . . . and
>
> WHEREAS these arrangements have been fully discussed in this meeting, . . .
>
> BE IT RESOLVED—That the officers of this Company are hereby authorized and directed to execute said note to the National Packing Company for $12,500 . . .[1]

Again, in 1904, the directors voted to borrow $30,375 from George E. Wood, a Chicago capitalist who at the time declined to invest in the company as a stockholder but was willing, upon the basis of certain collateral, to lend to it. Mr. Wood apparently was a man who took few risks; he received not only a chattel mortgage in which the company conveyed 88 refrigerator cars—its entire fleet of refrigerators—but the company also deposited "243 shares of treasury stock with said Wood as additional collateral, with the privilege of [Mr. Wood's] purchasing the same on or before March 1st, 1906." [2]

These and similar financial problems did not, however, plague the company for long. Gross income doubled in 1905, and a profit of $30,018 was earned, or double the annual figure that Mr. Epstein had forecast in 1902. The directors—Max Epstein, Hugo Epstein, Eugene Goldman and William F. Wood, who acted as secretary of the meeting—met on May 2, 1906 and

[1] Minute book, special directors' meeting, June 10, 1903.

[2] Minute book, special directors' meeting, August 27, 1904.

surveyed the financial results of operations up to that time. They found them satisfactory and accordingly resolved that

> WHEREAS, this corporation has accumulated a surplus in its treasury in excess of Sixty-five Thousand ($65,000) Dollars, and desires to declare a dividend of Sixty-five Thousand ($65,000) Dollars or 130 per cent upon the present outstanding stock of $50,000 payable in the stock of the Company;
>
> NOW THEREFORE, be it resolved that a dividend of 130 per cent be and the same is hereby declared . . .[3]

At the same meeting, Frank R. Meadowcroft and Julian W. Mack were elected as directors. Mack later was to attain distinction as a Federal judge of the U. S. Commerce and Circuit Courts.

Despite satisfactory earnings, however, no cash dividends were paid until the following year. Additional stock dividends were declared in 1907, 1908, 1910, 1911 and 1912, a total of $850,000 being so voted during the 1907–12 period.

General American, as a West Virginia company (its head offices were, of course, in Chicago and its plants in Indiana and Ohio) continued its expansion in both the car leasing and tank car manufacturing fields until 1916 without any public financing. In 1916, when the volume of business from services was running about a million dollars a year, and that from manufacturing several times that figure, so much more capital was desired that the corporation went to the public. As outlined in Chapter I, $3,500,000 of preferred stock was sold, with 50.000 shares of no-par common. These issues were brought out by the newly organized General American Tank Car Corporation, a New York company formed to hold the stock of the West Virginia corporation. The West Virginia company, however, continued to be the parent *operating* company until 1936.

In 1933, to describe better the broader scope of General American activities, the name of the New York company was changed to General American Transportation Corporation. In

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[3] **Minute book, special directors' meeting.**

1936, the West Virginia company was dissolved and the New York company became a direct operating enterprise. It, of course, also holds the stock of certain subsidiaries, but most of its principal divisions are no longer incorporated separately.

In June, 1947, the parent company had 11,119 stockholders.[4] Its assets totalled over $112,000,000, of which about $61,000,000 (after reserves for depreciation) were fixed, about $4,000,000 in the form of cash, about $43,000,000 in other current assets, and $4,000,000 in various investments. Of its liabilities, about $21,000,000 were current, $20,665,000 in the form of long-time debt, and about $70,000,000 represented stockholders' equity. A list of the corporation's operating divisions, offices and locations appears on pages 113–14.

2. *Principal Acquisitions*

This section briefly describes the chief acquisitions made by General American during its fifty year history. Those made in the tank car leasing field, as remarked in Chapter II, while of importance in the company's growth, account for only the minor portion of its development. The Federal Tank Line, Inc., of Pittsburgh, was purchased in 1926 and gave General American about 750 tank cars. The Constantine Tank Line of Oklahoma was acquired the following year. It brought 1,061 tanks into the General American fleet. The Quaker City Tank Line, Inc., had been started by a man named George Woodsmith, who was a former employee of General American. It owned 2,417 tank cars, 2,158 refrigerators, and 1,721 stock cars. General American purchased this line in 1928.

In the same year, purchase of the Standard Tank Car Corporation of Sharon, Pennsylvania, and of its subsidiary, the Standard Transit Company, was consummated; these negotiations had been begun in 1927. This acquisition brought a large group of tank cars and a very important manufacturing facility to General American. The Standard Transit Company's rolling stock added 2,827 tanks to General American's fleet, and the

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[4] As of June 30.

Standard Tank Car Corporation's shop gave to General American its present large tank car plant at Sharon.

The Liquids Dispatch Company was bought in 1929. It owned a tank line used primarily for the transportation of asphalt; the line had first been owned by the F. J. Lewis Manufacturing Company, manufacturers of roofing. The Lewis company sold out its roofing business, and General American acquired the tank line, consisting of 1,507 cars in rather poor condition. General American spent a substantial sum to rehabilitate them for use in its fleet.

In 1935, title was taken to the largest acquisition of tanks, that of 8,096 cars. These cars had belonged to the Pennsylvania Car Company and the Conley Tank Car Company, two Pittsburgh concerns that were merged in 1931. Two present vice-presidents of General American, William J. Stebler and Walter J. Curley, were originally organizers and executives of the Pennsylvania-Conley Lines.

The last tank acquisition was that of the Canton Tank Car Company. It was a comparatively small line that had been started by Daniel Coakley, of Cleveland. It was bought in 1936 and added 776 tank cars to General American's equipment.

In the refrigerator field, the most important acquisition was the Union Refrigerator Transit Company, of Milwaukee, in 1929. This company had begun business in 1903, with a fleet of 1,726 cars; it was a successor to a Kentucky company of the same line.[5] By 1929 it owned 4,912 cars. It had developed an enviable reputation for service to shippers and railroads; it was well financed, closely held, and efficiently operated. Cyrus L. Philipp, now a vice-president of General American, and B. A. Kiekhofer, assistant to the president of General American, were both executives of Union Refrigerator Transit Company.

The foregoing account includes all of the car leasing lines that General American acquired for eventual consolidation into its fleets. Several other lines, about to be described, represent somewhat different types of acquisitions: they are fleets of cars that were owned by individual shippers who sought to have General American take over and operate the cars for them. In this way, the shipper was relieved of both his investment in the cars and of the responsibility for their operation and management; he obtained, on a long-time contract, the many benefits of a specialized organization's knowledge and service in matters of handling, routing, maintenance, repair, etc.

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[5] The Union Refrigerator Transit Company of Kentucky began operations as a small car line in 1890.

The first such major take-over was that of the car line previously owned and operated by Swift and Company, the Chicago meat packers. This transaction, consummated in 1930, involved 5,476 refrigerator cars and 145 tank cars. General American paid $14,681,000 as purchase price. This was financed by giving Swift about $6,340,000 worth of ten year, five per cent notes and about $8,340,000 of equipment trust certificates.[6] As part of the transaction, General American agreed to lease the cars to Swift and Company for 30 years and to operate them as the "Swift and Company Line."

In 1932, a similar arrangement with another large Chicago packing firm, Armour and Company, involved 461 tank cars. In the same year, General American purchased and agreed to operate the entire refrigerator car fleet of the Rock Island System Railroad.

Three years later, two private car fleets in the tank car field were purchased in much the same way and for the same purpose. The Texas Company, petroleum producers and refiners, asked General American to operate its line of approximately 4,000 tank cars. Likewise, the Procter and Gamble Company, soap manufacturers of Cincinnati, turned over to General American a fleet of 1,200 tanks and asked General American, as specialists, to relieve them of the burden of operating and maintaining their own transportation service.

The only important car acquisition remaining for discussion is less an acquisition than the creation of a subsidiary company that is half owned by General American and half owned by The

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[6] Actually, the equipment trusts were issued by a newly formed company, General American Transportation System, Inc., as were the ten year notes which the parent General American company guaranteed.

Pfaudler Company of Rochester, New York. This joint enterprise, the General American-Pfaudler Corporation, owns and operates 320 milk cars. The Pfaudler Company is engaged in the manufacture of glass-lined tanks of various kinds. It makes the tanks for General American-Pfaudler milk cars, and the cars are then built in the General American shops at East Chicago. This affiliated company, General American-Pfaudler, has a capitalization of $590,000. Headquarters of General American-Pfaudler are at Chicago.

In non-car fields, the chief acquisitions have been in the plate and welding, process equipment and plastics fields. They include the Petroleum Iron Works at Masury, Ohio,[7] the Eclipse Moulded Products Company of Milwaukee, and McCoy-Jones and Company, Inc., of Chicago, both plastics concerns, and the four process equipment companies already described in Chapters I and IV: Louisville Drying Machinery, Turbo-Mixer, Conkey and American Machine; in the last case, only designs and patents were bought. The table on pages 97–98 gives specific dates and details.

Two other affiliates, the Canadian General Transit Company, Ltd., of Montreal and the Western Tank Car Company of Los Angeles, have been mentioned in Chapter II and are also listed on pages 97–98. General American Aerocoach Company, less an acquisition than a General American developed subsidiary, is discussed in both Chapter I and Chapter IV.

3. *Funded Debt*

It was explained in Chapter I that General American pioneered among car companies in the use of equipment trust certificates as a financing device. Throughout its history, its capital needs have been met in important degree through the issue of such notes. The purpose of the present section is not to trace in any detail the history of this financing, but to point out its general trends.

[7] Adjoining the General American Tank Car plant at Sharon, Pennsylvania; the Ohio-Pennsylvania state line runs through the properties. The company was not acquired but only a portion of its land and its plant.

TABLE C

SUMMARY OF PRINCIPAL ACQUISITIONS

Company From Which Purchased	Year	Main Assets Acquired
American Machine Co.	1943	Drawings and designs
Armour & Co.	1932	461 tank cars
Canton Tank Car Co.	1936	776 tank cars
Canadian General Transit Co. Ltd.		45% of stock
Conkey Sales Engin. Organization	1944	Goodwill, personnel
Constantine Tank Line	1927	1,061 tank cars
Eclipse Moulded Prod. Co.	1945	100% of stock
Federal Tank Line, Inc.	1926	740 tank cars
Gar Wood Industries, Inc. (bus division)	1939	Patents and designs, jigs and parts
Liquids Dispatch Co.	1929	1,507 tank cars
Louisville Drying Machinery Company	1943	100% of stock
McCoy-Jones & Co., Inc.	1944	100% of stock
Pennsylvania-Conley Tank Car Co.	1935	8,096 tank cars
Petroleum Iron Works	1941	Plant and equipment only
Phillips Petroleum	1945	2,046 tank cars
Procter & Gamble	1935	1,200 tank cars
Quaker City Tank Line, Inc.	1928	2,417 tank cars 2,158 refrig. cars 1,721 stock cars
Rock Island Railroad	1933	1,243 refrigerator cars
Standard Tank Car Corp.	1927–28	2,827 tank cars and plant
Swift & Co.	1930	5,476 refrigerator and 145 tank cars

TABLE C—*Continued*

SUMMARY OF PRINCIPAL ACQUISITIONS—*Continued*

Company From Which Purchased	Year	Main Assets Acquired
Texas Co.	1935	4,662 tank cars
Turbo-Mixer Corp.	1943	100% of stock, designs and personnel
Union Refrig. Transit Co.	1929	4,912 refrigerator cars
Western Tank Car Co.	1927	50% of stock and use of repair shop

General American's funded debt was less than $100,000 in 1904 and then grew as the business grew, reaching a million dollars in 1915. By 1920 it was over $10,000,000 and remained around this level until after 1926. Then it rose extremely, reflecting the financing of the numerous acquisitions between 1927 and 1931. By the end of 1931, it had reached an uncomfortable height; it amounted to over $41,000,000. This figure was almost as large as the shareholders' capital and surplus, and interest charges on the debt in that year amounted to $1,791,461. While net earnings before charges came to several times this figure, total gross income was beginning to fall off with the deepening of general depression.

This debt situation was seen to be extremely undesirable. As a matter of fact, in 1932, the interest paid on the debt exceeded net income after charges and taxes. Steps were taken, accordingly, to reduce fixed charges, and adroit financial management effected a marked decline in outstanding obligations between 1932 and 1934. In 1931 the debt, as stated, was $41,659,693; by the end of 1934 it stood at $27,759,549.

Since 1935, reduction in the debt has been almost continuous, until in 1947, total funded and other debt stand at only about $20,000,000.[8] This is equal to about one-fourth of capital stock and surplus and requires an interest payment of less than

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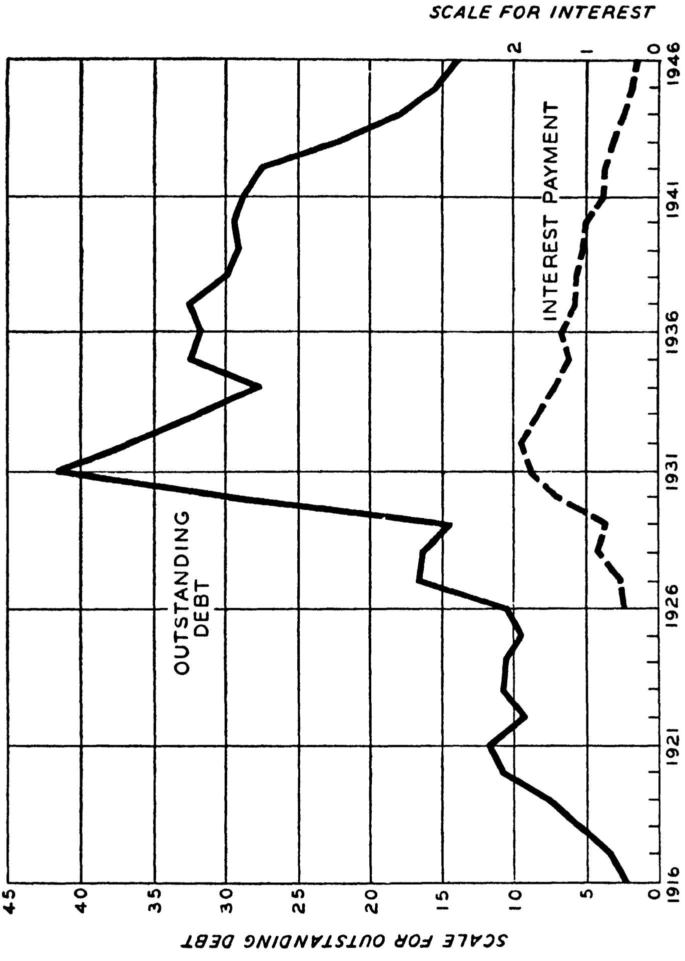
[8] As of June 30, 1947, the exact figure was $20,665,000, of which $17,029,000 was equipment trust certificates.

CHART 9

FUNDED DEBT, 1916-1946

MILLIONS OF DOLLARS



$450,000 a year. In 1946, net income before charges was nearly 20 times the interest requirement.[9]

Chart 9 shows the course of the debt since 1916. Table 9 gives the debt figures since 1903. Chart 10 shows the earnings available for fixed charges.

4. *Investment, Earnings and Dividends*

General American's original capital consisted of the $1,000 commission on Max Epstein's sale of cars to the Duquesne Brewing Company. This equity grew to $63,000 by 1903, the first year after the General American business was incorporated as a West Virginia company. Total assets, in 1903, amounted to about $300,000.

Of the present more than one hundred million dollar total of General American assets,[10] there is a net investment of approximately $17,000,000 in plants and equipment and $44,000,000 in rolling stock. Total cost, before depreciation, of the plants equals about $29,900,000; and of the car fleet, $120,000,000.

A major breakdown of the plant investment account[11] gives the following approximate distribution, in millions of dollars:

	COST	RESERVE	NET
East Chicago plants	$9.5	$6.6	$2.9
Sharon plants	5.1	2.6	2.5
Terminals	6.3	1.5	4.8
Aerocoach plant	2.7	0.4	2.3
Plastics plants	1.6	0.4	1.2
Precooling	0.75	0.35	0.4

Plant investment of the process equipment division is not segregated but is included in the figure for Sharon; as stated

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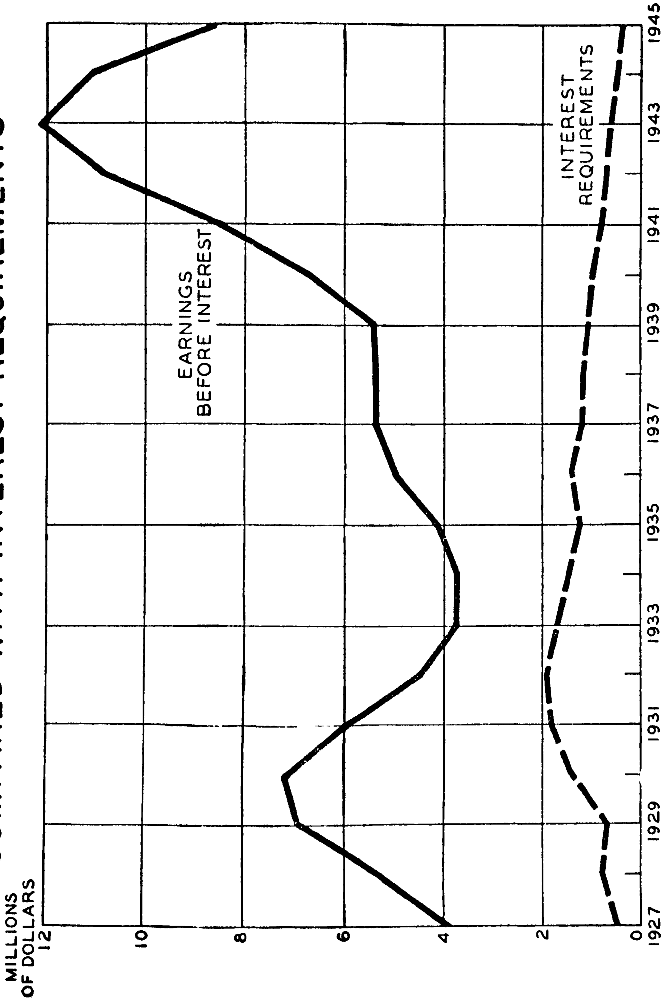
[9] Net income after all charges and taxes was nine times the interest figure; the twenty-to-one ratio is for net-before-taxes plus interest payment, divided by the interest payment.

[10] As of June 30, 1947.

[11] Excludes executive office equipment.

CHART 10

EARNINGS BEFORE INTEREST*
COMPARED WITH INTEREST REQUIREMENTS



*EARNINGS ARE TREND-BASED ON THREE-YEAR MOVING AVERAGE elsewhere, it shares the facilities of the plate and welding division.

Table 12 in the Appendix gives these plant investment data for selected years at East Chicago, Sharon and Warren (the plant that preceded Sharon) in selected years beginning with 1907.

General American earnings are, of course, derived from capital investment and operations in several fields of operation. Before reviewing their rate of return as a whole, it will be of interest to indicate the approximate manner in which gross and net incomes are distributed among these types of activity.

As remarked in Chapter I, both the absolute and comparative volume of manufacturing income fluctuates greatly from year to year; while car building is a matured industry, it is far from stabilized because of cyclical fluctuations—like steel, it is a "feast or famine" type of heavy industry. Apart from these cyclical fluctuations, we may broadly characterize General American's gross and net income history as follows.

The enterprise started as a leasing company. After eight or nine years, it became a manufacturing company also, and from 1907 to 1930, its *gross* income was derived more largely from manufacturing than from service activities. From 1931 on, the dollar volume from services has exceeded that from manufacturing, although both have grown substantially. Chart 5, already presented in Chapter I, shows the proportions of gross income derived from the different fields of General American's diversified activities.

In terms of net income, however, the story is somewhat different. It will be recalled that in Chapter I it was stated that despite a substantial diversification of operations, General American is still significantly a car leasing company and the net earnings from tank rentals bear out this statement. The profits from tank and freight car *manufacturing* are not only a small proportion of total net earnings but in some years are nil—deficits were suffered on plant operations in four of the ten years from 1931 through 1940. But tank car operations have always shown a profit, and that profit has usually been a substantial part of total earnings.

While the profit from manufacturing operations varies greatly from year to year, in most years it comes to less than one-fourth of total earnings. Since the gross value of manufacturing operations, since 1931, has in most years been substantially smaller than that derived from services, a discrepancy between the net earnings from tank car rentals and from plant operations is to be expected; yet even when the gross income from manufacturing about *equals* that from services, the disparity of *net* earnings sometimes persists. In 1944, for example, the gross incomes from services and manufacturing (plant operations) were almost exactly equal, but the net from tank car rentals was two-and-one-half times as large as that from all manufacturing. To increase the profit from plant operations, the management has embarked on the augmented and diversified manufacturing programs described in earlier chapters, and after the effects of these new programs are felt, future ratios in this respect may be markedly different.

In terms of net income as related to stockholders' capital, General American presents an interesting record. Prior to 1920, the return in several years ran 20 per cent or more upon net worth. As with many expanding corporations, however, the rate of return fell off sharply after the initial period of growth. In only one year of the 1920's did the return exceed 11 per cent. Chart 11 shows the recent course of this rate of return—the ratio of net profits to stockholders' capital.

Two important observations are to be made from an examination of these data. The first is that while the profit rate is far lower for the last 15 years than previously, General American still has never shown a deficit. Even in 1932 when many companies in heavy industry either lost huge sums or barely broke even, General American earned a modest return of about 3 per cent.

The second observation is that from 1934 through 1946, General American's rate of return has run between 4 and 7 per cent. In most years, the return has not much exceeded 5 per cent. This is less than the level of return enjoyed by most successful industrial corporations; but the greater stability of General American's earnings is very marked. Chart 11 makes a comparison between General American's rate of return and that of 47 large manufacturing companies. The companies represent a cross-section of American industry—the successful and the unsuccessful among companies with assets of about $20,000,000 and over.[13]

Diversification of income sources largely accounts for the comparative steadiness of General American's return on capital. Along with a conservative financial policy and these comparatively stabilized earnings, there has been a notable continuity of dividend payments. While the dividend rate has, of course, varied with business conditions, General American's dividend record since the first distribution on the New York corporation's common stock in 1919 has been uninterrupted, even in years like 1932 and 1933. Table D gives the record of earnings and dividends from 1919 through 1946.

As a supplementary note to this financial chapter, mention

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[13] The sample—the list of companies—was selected by the writer some years prior to the preparation of this history. It was used by him, in substantially the same form, in testimony on the rate of return for industrial corporations, before the Illinois Commerce Commission in 1936 (Docket No. 23146). The 47 companies, taken as representative of "American large-scale competitive industry" (regulated companies, such as utilities, are omitted) are the following:

Foods. American Snuff; American Tobacco; Beech-Nut Packing; Cudahy Packing; General Cigar; George W. Helme; Liggett & Myers; Loose-Wiles Biscuit; Quaker Oats; Swift & Co.

Textiles. Cluett, Peabody; Hart, Schaffner & Marx; Julius Kayser; Nashawena Mills; Nashua Manufacturing; Pacific Mills; U. S. Finishing.

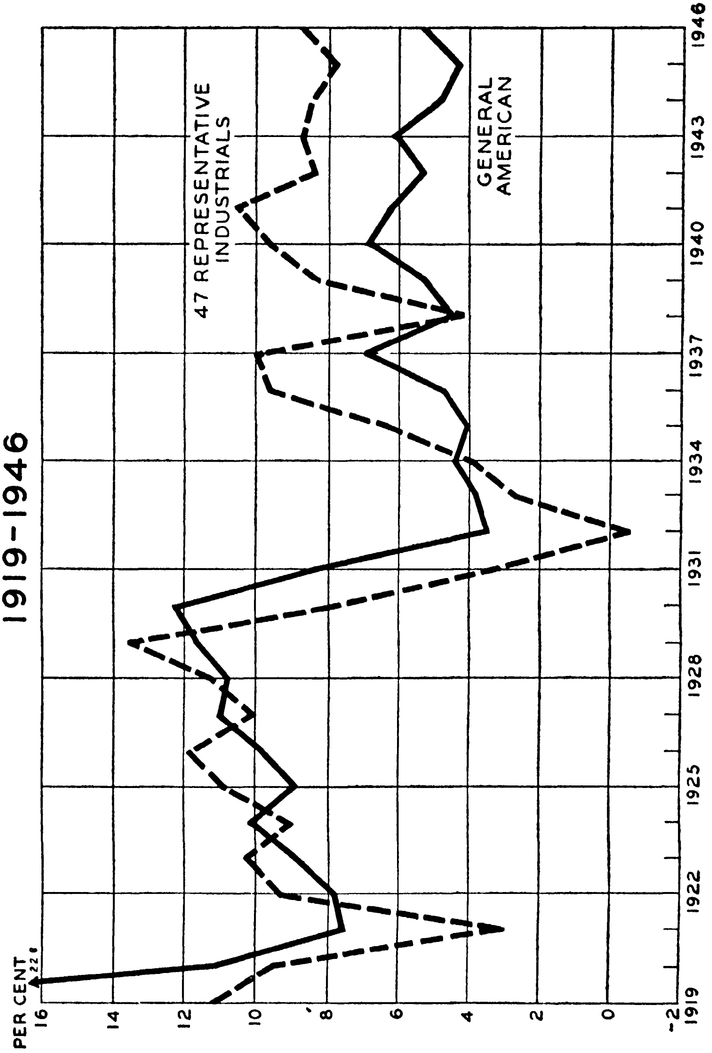
Metals. (Iron and Steel, Machinery, Transportation Equipment.) American Steel Foundries; Bethlehem Steel; Chicago Pneumatic Tool; Ford Motor; General American Transportation; General Electric; General Motors; Hudson Motor Car; Nash-Kelvinator; U. S. Steel.

Chemicals. Air Reduction; Atlantic Refining; Atlas Powder; Consolidated Oil; E. I. du Pont de Nemours; Mathieson Alkali; Parke Davis; Procter & Gamble; Sherwin Williams; Standard Oil; Union Oil Co. of California.

Miscellaneous. General Tire & Rubber; B. F. Goodrich; Goodyear Tire & Rubber; Graton & Knight; International Shoe; Johns Manville; Lone Star Cement; Pittsburgh Plate Glass; U. S. Rubber.

CHART II

NET INCOME EARNED ON STOCKHOLDERS' CAPITAL 1919-1946



should be made of a new stock issue floated after the major parts of this book were written. In November, 1947, the corporation sold $15,000,000 worth of preferred stock. The issue carries a rate of 4¼ per cent and is cumulative. This new capital, which was obtained immediately by sale of the stock through a syndicate headed by Kuhn, Loeb and Company, is being used for expansion purposes. It brings the corporation's total stockholders' equity, as of December 31, 1947, to $85,749,163 and its total assets to $131,802,265.

TABLE D

PROFITS AND DIVIDENDS, 1919–46

Year	Net Profits	Dividends
1919	$3,558,885.96	$ 623,711.00
1920	1,733,803.78	953,964.66
1921	1,154,614.15	1,106,412.00
1922	1,521,795.53	1,260,533.25
1923	1,818,256.03	1,397,639.25
1924	2,046,998.45	1,385,342.00
1925	2,003,956.21	1,356,213.25
1926	2,265,013.83	1,485,135.25
1927	2,921,045.77	1,774,529.00
1928	3,910,753.60	2,283,039.00
1929	5,770,740.82	3,161,844.78
1930	6,518,181.18	4,213,367.11
1931	4,011,267.95	3,120,158.87
1932	1,638,962.46	745,648.00
1933	1,974,558.43	786,549.00
1934	2,384,641.43	1,125,029.13
1935	2,208,924.22	1,449,119.01
1936	2,966,414.60	2,162,406.38
1937	4,542,655.56	3,577,332.50
1938	3,004,899.02	2,322,708.76
1939	3,214,043.37	2,451,748.13
1940	4,242,404.99	3,096,945.00
1941	3,905,634.70	3,122,892.00
1942	3,405,368.10	2,081,928.00
1943	4,003,380.61	2,342,956.50

TABLE D—*Continued*

PROFITS AND DIVIDENDS, 1919-46

YEAR	NET PROFITS	DIVIDENDS
1944	$3,177,100.78	$2,603,985.00
1945	2,841,098.51	2,603,985.00
1946	3,598,870.38	2,603,485.00
1947	6,982,180.38	3,218,637.88

CHAPTER VII

WAR RECORD

1. *East Chicago*

GENERAL American's record in the second world war falls into many categories, but for purposes of reviewing its activities briefly in this chapter, we may somewhat artificially divide them into manufacturing and service activities. The reasons for use of the word "artificial," as well as those for recounting this record of important contributions rather briefly, will appear shortly.

At East Chicago's Plant #1, tank, box and gondola cars were produced not only for our government but for foreign railroads to meet their urgent war needs. To the nonstandard, varying gauge railroads of France and China, of Africa and India, of Iran and Iraq, went General American cars from Indiana. But, as may be imagined, East Chicago in 1941–45 was not merely a car shop. It made 90 millimeter shells and 75 millimeter shell forgings; it made invasion barges; and it made airplane landing mats of steel—24,000,000 square feet of them in less than 24 months. Ammunition trailers and airplane fuselages were also products of East Chicago's Plant #1 and Aerocoach's plant at Hegewisch, which worked in close cooperation with it.

And along with these war manufactures went the regular and rapid, the frantic and furious business of keeping cars in repair—freight cars at Plant #1 and tank cars at Plant #2. Fewer new cars were built because of restrictions on materials and the diversion of available capacity; yet the existing cars were run day and night, at higher speeds than ever, in the service of war. It was repairs that kept them going; the prosaic work of patching up riveted sections of tanks, and renewing spring planks and bolsters, contributed to winning the war as much as did the more spectacular tasks of making invasion barges or experimenting with airplane gliders.[1]

2. *Sharon*

At Sharon, tank car repairs also went on with a vengeance, along with new and more dramatic developments. Armored hulls for M-4 army tanks were welded and assembled, pressure vessels of various types were made for the navy and for foreign governments. For the M-4 tank production, emergency shop facilities were created by bringing in three used steel buildings from other parts of the country and hastily erecting them at Sharon, because time did not permit the construction of new ones.

Tank destroyers, mobile gun carriage mountings, and 105 millimeter shell cases were among Sharon's other products for the fighting front. Sharon also made refinery towers and storage tanks for Russia, fractionating columns for Arabia, and locomotive tenders. Pilot houses for landing barges were made of armor plate; cargo barges were fabricated in their entirety and shipped, knocked down, for overseas use. Among the largest single items were 22 steel pier barges, each 150 feet long and weighing 300 tons. All of these munitions of war augmented the production of pipe and plate, and riveted and welded tanks, that the Sharon shops continued to make for both domestic and foreign use.

3. *Service Activities*

In General American's case, the line between manufacturing and service activities is artificial as applied to war work because without its car fleet's continued operation, neither its own manufacturing nor that of other industries could take place. Its 55,000 cars were kept on the rails, carrying the liquids that went into all kinds and shapes of war production. Sugar molasses (for ethyl alcohol) made into gunpowder; gasoline, butane, chlorine, helium, muriatic acid; butadiene, styrene and sulphuric acid used to make synthetic rubber; these were only a few of the war materials that were sped across the continent in General American cars.

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[1] General Airborne Transport Co., a General American subsidiary, engaged in the design and fabrication of a new type of cargo glider, in California. Peace came before a successful design was developed.

Even in an age of aviation, the essential function of the railroads was demonstrated as never before. The tank car that previously carried wines was used to transport a different alcohol for ammunition; the car that formerly brought standard grades of gasoline for families to put into passenger automobiles for Sunday motoring now carried high octane gas for fighters and bombers.

In these war activities, the General American storage terminals played a vital and interrelated role. They loaded high octane gas into tankers, they transferred all manner of liquids from cars to boats, and they packaged, drummed, and filled containers for overseas use by the armed forces. In 1943 and 1944, the terminals loaded nearly 400 tanker ships, each ship carrying from 10,000 to 156,000 barrels of fuel oil. In those two years, they loaded about 125,000 tank cars, and unloaded about 50,000 cars. At the Carteret terminal alone, more than a million five-gallon cans were filled with gasoline for export to the European and other theatres of war.

At Panama City, Florida, the division operated a terminal for the government under Defense Plant Corporation contracts. This terminal put through 448,143,108 gallons of liquid during 1943–45. General American derived no profit from this terminal, receiving only a nominal fee as manager of the operation.

Along with East Chicago, Sharon, Hegewisch and the terminals, all General American car repair shops throughout the country, and also the precooling division in West Los Angeles, contributed to the corporate and national effort to win the war. Space will not permit any specific account of their activities; but the men and women who worked in them gave of their time and energy as greatly as did the workers in the company's larger plants and service centers.

4. *Sales Volume and Profit*

General American's contributions to the winning of World War II were substantial. The greater portion—that represented by the services of the car fleet to industry—is not really susceptible of measurement in either dollar or other terms. The sales made directly to the Government can be stated in dollars, and comprised roughly one-third of General American's total gross income in war years.

In 1943, the manufactured products which General American delivered to the United States and other allied governments amounted to approximately $26,000,000 and in 1944, to about the same figure (excluding services). In some of the items, no profit at all was made; in ammunition trailers and in repair materials, for example, General American bore a loss.

In new cars, a profit of less than 3 per cent was earned on sales of $8,750,000. In most other categories, the profit on both sales and invested capital was moderate. The total amount of "renegotiable" or war contract volume during 1941–45 was $85,297,000. Of this sum, subject to renegotiation, only $15,000,000 was actually renegotiated and only $400,000 was given back to the Government as representing an over-return. In comparison with the circumstances of many other corporations, this is an exceptionally small figure; apparently, General American did not particularly try to make profits out of war work—the work came first. At least, if it did so attempt, it did not succeed.

This chapter has purposely been brief. In matters of the spirit, words are notoriously inexpensive things and phrases about patriotic effort are likely merely to voice clichés. The General American management seems to have felt this with respect to its war efforts, and seems frequently to have understated its part. Its executives preferred to understate rather than overstate; when others advertised about their production miracles or their great devotion to the cause, General American announced that it deserved no especial credit for what it was doing. The epitome of this attitude found expression in an advertisement[2] which General American published just before V-J Day (in July, 1945) which appeared in *Time, Time Overseas Edition,* and in the *GATX Press* (the company's house organ). This somewhat unusual advertisement is here reproduced in full:

> YES, WE'RE DOING WAR WORK,
> *BUT WHAT OF IT?*
>
> We could do no less than put all our resources into the job. And of course, we'll continue to do just that until Victory is won. We don't pat ourselves on the back for doing something expected of us. But we do take pride in our 2,017 employees in service, and we honor the memory of 31 who have given their lives. No matter how much war work *we* do, it is nothing to what they have done.
>
> GENERAL AMERICAN
> TRANSPORTATION CORPORATION
> Chicago

In pursuance of this same accent, General American decided to make its war memorial not a showy monument or hall or series of bronze plaques but a working scholarship fund for children of its employees. The General American scholarship system at the University of Chicago, already mentioned in Chapter I, was accordingly established as a living and continuing tribute to the members of the organization who served and gave their lives for their fellow citizens who carried on the fight at home.

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[2] Written by Messrs. Laud and Douglas.

CHAPTER VIII

ORGANIZATION AND OPERATING POLICIES

1. *The Organization in 1946*

THIS chapter aims to give a bird's-eye view of the General American organization as it exists today. It brings together various factual aspects presented in earlier chapters, and also summarizes certain of the management policies that earlier chapters either have stated briefly or only implied.

The General American business, in late 1946, comprises numerous categories of industrial activities and offices. The scheme under which these may be listed for reference is broadly as follows:

A. Service activities
B. Manufacturing activities
C. Repair shops
D. Sales offices

Under the first two heads, respectively, a commodity classification will be used.

THE GENERAL AMERICAN ORGANIZATION

Parent Company: General American Transportation Corporation (of New York)

Headquarters: 135 South LaSalle Street
Chicago
Eastern office: 10 East 49th Street
New York City

A. *Service divisions*

1. Tank car operations (headquarters: Chicago and New York)
2. Refrigerator car operations (headquarters: Chicago and Milwaukee)
3. Stock car operations (headquarters: Chicago)
4. Other freight car operations (headquarters: Chicago)
5. Milk car operations, through General American-Pfaudler Corporation (headquarters: Chicago)
6. Tank storage terminals at Carteret, New Jersey; Goodhope, La.; Houston, Texas; Corpus Christi, Texas; Westwego, La. (headquarters: Chicago)
7. Precooling division at West Los Angeles and Lodi, California; Orlando, Florida, and other points (headquarters: West Los Angeles)
8. Field erection (of tanks, smokestacks, plate and welded products), operating out of Sharon, Pennsylvania.

B. *Manufacturing divisions*

9. Railroad freight cars—East Chicago, Indiana
10. Tank cars—Sharon, Pennsylvania
11. Motor coaches—East Chicago, Indiana
12. Plate and welded products—Sharon, Pennsylvania
13. Process equipment—Sharon, Pennsylvania (headquarters, New York City)
14. Plastics—East Chicago, Indiana, and Milwaukee, Wisconsin

C. *Car repair shops*

15. Argentine, Kansas
16. Chicago, Illinois
17. Colton, California
18. East Chicago, Indiana
19. East St. Louis, Illinois
20. Elkhart, Indiana
21. Franklin, Pennsylvania

22. Fort Worth, Texas
23. Goodhope, Louisiana
24. Indianapolis, Indiana
25. Kansas City, Kansas
26. Los Angeles, California (with Western Tank Car Company)
27. Middlesex, New Jersey
28. Milwaukee, Wisconsin
29. Milwaukee, Wisconsin U.R.T.
30. North Fort Worth, Texas
31. Sharon, Pennsylvania
32. Sioux City, Iowa
33. South Omaha, Nebraska
34. South St. Joseph, Missouri
35. South St. Paul, Minnesota
36. St. Louis, Missouri

D. *Sales offices (other than Chicago and New York)*

37. Buffalo, New York
38. Cleveland, Ohio
39. Dallas, Texas
40. Houston, Texas
41. Los Angeles, California
42. Louisville, Kentucky
43. New Orleans, Louisiana
44. Omaha, Nebraska
45. Pittsburgh, Pennsylvania
46. St. Louis, Missouri
47. San Francisco, California
48. Seattle, Washington
49. Tulsa, Oklahoma
50. Washington, D. C.

2. *Operating Policies*

In its sales departments, General American attempts to put into practice the philosophy set forth in our previous chapters (particularly Chapter II), namely, that for services and products such as the corporation offers, the needs of customers vary greatly and that whatever is leased or sold should be specialized accordingly. Whether it be the lease of a car for a month or the sale of a piece of process equipment that will last for 40 years, what is sold must be designed to meet the user's particular need. The customer should be neither oversold nor undersold; his special problems should receive continuous study.

The engineering department of General American serves all divisions of the business; it functions as a general staff of technical specialists. Headed by Rea W. Thompson, its headquarters are in Chicago. Approximately 225 persons are employed in this general engineering department, which designs equipment for customers and aids the General American plants in a wide variety of mechanical, electrical and other technical problems. Over the years, the department has to its credit a great multitude of pioneer developments, of which the following represent only a partial list:

GENERAL AMERICAN "FIRSTS"

1. Aluminum tank cars
2. Helium tank cars (tube type)
3. Fusion welded steel tank
4. Drain plates in tank domes
5. Liquid carbon dioxide car
6. Anhydrous hydrofluoric tank cars
7. Combination cast steel underframe
8. Dry-flo tank cars
9. Wet-flo tank cars
10. Bulk sugar car
11. Double shoe brake beam for ore car
12. Plywood refrigerator car
13. O. J. Parks' tank outlet valve
14. Salt shaker device for resalting ice in refrigerator cars
15. Fusion welded underframe for tank cars

Originally, the engineering department was divided into groups of persons located at the company's different manufacturing plants. But with the development of so many diversified and interrelated lines of manufacture, it became advisable to found a department that would be both centralized and flexible. Accordingly, the several technical groups were consolidated at Chicago. In the number and variety of items engineered the department is probably unique—the gamut of designs runs from the smallest plastic part to a 16,000-gallon tank car or a 400-foot piece of process equipment.

Along with the establishment of the central engineering office, a research and development department was created. Headquarters of the development group are in the engineering office at Chicago. The industrial laboratory, which is at East Chicago, is equipped to test customers' products in connection with the choice of tank car linings, insulation, etc., to test plastic products for quality control and improvements in production methods, and to check upon new materials for the purchasing department in its efforts to serve all divisions of the company. Two smaller research laboratories are also operated by the company. One is at the Aerocoach plant, where research in carburetion and related problems is undertaken. The other is a temporary refrigeration laboratory at Highland Park, Illinois. The head of the research and development department is Paul Talmey, while Dr. Gregoire Gutzeit is laboratory director.

In financing the General American business, the provision of adequate working capital and conservative investment in fixed plant have been watchwords. Mistakes have, however, on various occasions been made and some very unprofitable investments have been at times undertaken. The purchase of the Barkley-Grow Airplane Company in 1938 was distinctly one such error; it was subsequently liquidated at a loss. The acquisition of the Buffalo Steel Car Company in 1928 was another error; this car repair shop proved to be in the wrong location for General American's purposes and was soon abandoned. The several foreign-owned subsidiaries in continental Europe, established between 1929 and 1931 also proved to be sadly mistaken ventures, although General American was not alone in miscalculating the course of the international situation and the developments that led to the rise of Hitler's Europe.

The percentage of such errors throughout General American's history, or even in any one year of its life, is not high. The management is willing to take occasional chances, but in doing so it risks only a small proportion of its capital in any one new venture. The business of risk-taking is, after all, a matter of degree; an entrepreneur who endeavors to assume no risks can never succeed. Ford, Edison, Rockefeller, Vanderbilt, Durant and du Pont all took chances; if they had merely invested their capital "safely," there would have been no great enterprises with which their names today are connected. Risk-taking there must be in any business venture; but once an organization is established, a progressive yet conservative management attempts to minimize the extent of the risk by skillfully diversifying its activities and investments.

In the purchasing department of General American, buying of major items is done for all the company's plants. Centralized at Chicago under J. C. Vorhauer, vice-president in charge, the department aims to pay fair prices for materials and component parts of high quality. Its expenditures often run to as much as $3,000,000 a month. The basic principles that the purchasing staff tries to practice were once stated by Mr. Selig in what, to some business men, may seem an idealistic formula. General American believes, says Selig, that a purchasing agent should not necessarily seek either the lowest bid or attempt to "beat down" the price. The company seldom seeks simply the lowest price, even on major purchases, because it feels that a liberal policy is not only more generous but carries advantages that the sharper, harder type of buyer does not enjoy. These advantages are stated as follows:

1. Assured source of supply, even in times of shortage.
2. Uniformly high quality of material purchased; our suppliers don't have to cut any corners. . . .
3. Reliable delivery. . . .
4. A better product. . . .

5. Ability to meet competitive prices because, when we're in a tight place, our suppliers help us out.
6. Greatly increased good will.[1]

General American buys for its various divisions from between eight and ten thousand different suppliers. Because of the quantities in which purchases are made, it receives the lowest volume prices, but this is not inconsistent with the purchasing principles already enunciated. It seeks the lowest prices at which, in the size lots it buys, the material or parts can be supplied without loss to the supplier; but it does not seek *simply* the lowest price. It tries to build a basis for enduring relationships with its suppliers, and does not believe that such relationships are achieved when a large buyer takes advantage of his power to force a vendor to supply goods without covering all of his costs.

The accounting department is headed by the controller, Arthur A. Selonke. The secretary of the corporation, Maurice J. Feldman, and the vice-president and general counsel, William S. Hefferan, Jr., direct staffs that cope with the various tax and other legal requirements that beset all large corporations.

The traffic department, under the direction of D. H. Smith, a vice-president, keeps track of the 38,000 cars in the tank car fleet as well as of several other classes of cars.[2] It aims to keep them scheduled so as to reduce empty mileage to a minimum. Never was the effectiveness of this department's intricate technique better demonstrated than during the war, when its responsibility was "to have a pre-requisitioned number of cars actually on hand to meet cargo-boat schedules so that we could supply our allies with the essential fats and oils that are required in making munitions of war . . . These schedules were met without undue delay and without tying up cars needlessly . . ."

Approximately 150 persons working in this department perform four main functions. One is to know where each car is:

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[1] Lester N. Selig, "Six Reasons for Paying Fair Prices," *Nation's Business*, July, 1933.

[2] Except refrigerators, which are handled by the traffic department in the Union Refrigerator Transit division at Milwaukee.

the point to which shippers have consigned it, and the routes over which the railroads are moving it. A closely related function, after the car has finished its journey, is to get it to any other point where it is needed. The third important function is to keep account of mileage figures.[3] A fourth function is to route the movements of newly manufactured cars and other products sold by General American, and to route the shipments of materials and supplies purchased by the company.

The traffic department keeps track of each car's dispatch and arrival at its destination by collating some 150,000 different reports received every month from shippers and railroads. By the constant tabulation and surveillance of these reports, the department knows when every car has left a shipper's plant or depot, its routing, and its destination. As a result, the department can tell where to put its hands on cars of given types and capacities to meet varying geographical and seasonal needs as they arise.

"As an illustration, in the fall and early winter months, there is always a heavy demand for 8000 gallon capacity tanks, equipped with heater coils, for loading of molasses and cotton seed oil from the south. This must be anticipated and suitable equipment assembled at shops and railroad storage points in that territory so that it will be available for prompt delivery when required. About the same time of the year, the packers and glucose shippers in the north call upon us for a great number of cars for their products, requiring equipment of the same general type. They also must be protected. The distribution must be watched very closely. If we were to send an over-supply of cars of this type to the south, and later found it necessary to empty haul them back to take care of the packers' needs, it would be ruinous from a standpoint of the empty mileage."[4]

By "ruinous . . . empty mileage" is meant that General

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[3] It was explained above in Chapter II why the railroad pays "mileage" to the car owner; the necessity for balancing empty and loaded mileage will soon be explained below.

[4] D. H. Smith, in a lecture to an employees' training course, June 7, 1935.

American would need to pay the railroads for any excess of empty over loaded mileage at the end of an accounting period. The reason for this is as follows:

While the railroad pays the car owner two cents a mile for every mile the car is hauled, the road does so only for *equalized* empty and loaded miles; any *excess* empty mileage (on which the railroad, of course, receives no freight revenues from the shipper) is charged to the car owner. If he is unable, within six months after the close of the year, to make up the difference by supplying sufficient loaded mileage to the same carrier, he must meet a freight bill to compensate the railroad for having moved his empty cars without having moved an equivalent loaded mileage.

The traffic department saves General American many thousands of dollars each year, by distributing and routing cars so as to get "double loads"—loads in each direction as often as possible. All this maneuvering is coordinated with General American's car repair activities. If, for example, a car in Georgia requires repairs, it must be sent to Goodhope, Louisiana, the company's nearest repair shop; it may then have to be returned to the customer in Georgia. The traffic department routes the empty car to Louisiana over the railroad on which the corporation currently may have the greatest loaded mileage. If a car is to make a trip *loaded,* it is sent, when there is any choice of routes, over the road on which the company has excess *empty* mileage. Thus from a dollars and cents operating standpoint, rather than from merely a bookkeeping point of view, traffic control is highly important. The magnitude of operations can be indicated by stating that during the month of November, 1947, the car fleet under discussion recorded 64,864,928 "earned miles."

The department's final function relates to the routing of the corporation's own freight. Using the "distance tables" that it has built up over the years—books showing the mileage for more than 500,000 hauls between different railroad points in the United States—it charts all routes for delivery of new cars sold to customers—cars that are shipped from the Sharon and East Chicago plants. It also prescribes, to achieve maximum economy, the routes to be taken by many purchased materials and parts, shipped by General American's suppliers, to its numerous manufacturing and repair plants throughout the country. As General American's total purchases often run to more than $25,000,000 or $30,000,000 annually, it can be seen that substantial savings are possible through calculation of the most beneficial routes and freight rates.

Last but not least, among General American's operating principles and organization techniques, are its personnel policies and practices. The corporation maintains several insurance and scholarship plans that have already been mentioned in other chapters. It also operates a modern medical service, with plant physicians in immediate charge and with Dr. Edward J. Lewis, a distinguished Chicago physician and surgeon, as medical director for the whole company. Dr. Lewis continues his private practice—he feels that he is therefore not "institutionalized" in his point of view—but he supervises General American health activities on a year-round basis. He is personally available for consultation to any General American employee with a serious medical problem.

Beyond such specific ancillary benefits for employees, however, the General American management is interested in creating and maintaining a satisfying atmosphere for work on the job itself. Throughout the organization, General American aims—although it does not always succeed—to contrive conditions which will cause men to put forth their best efforts. It endeavors to give to its personnel a feeling of security—not a guarantee against displacement if deserved, but the assurance of employment and advancement when advancement is earned. To this end, General American executives attempt "to drive with a loose rein." They endeavor to give substantial responsibility to those who work for them because the delegation of responsibilities, and the necessary authority to permit their execution, is what stimulates men to work to capacity. While supervision and guidance are needed, they feel that a too constant surveillance wastes the time of the higher executives and also inhibits the fullest performance by subordinates. Here, as elsewhere, a balance must be struck between extremes. The top management must maintain enough contact to know what is going on and to exercise control; but if it actually has to operate for members of the lower level, it has selected the wrong men as subordinates.

General American also feels that promotions from within the organization (as an objective to be deviated from only in exceptional circumstances) develop morale as does nothing else. Finally, it believes in freedom of expression—the privilege of submitting opinions, offering suggestions, and on occasions proffering honest criticism—throughout the organization. Legitimate ends are seldom harmed by honest opinions, but much damage may be done by either their suppression or "back-door" expression.

Selig and Laud especially have stressed what they call "the intangibles"—the realization that tolerance, generosity and fair play should be the rules of the game and not hardness, niggardliness or chicanery. Their philosophy is that men's mistakes are to be forgiven if honest and not too frequent; they also contend that men's remunerations are to be set not at the minimum but often at higher than the strictly necessary figures.

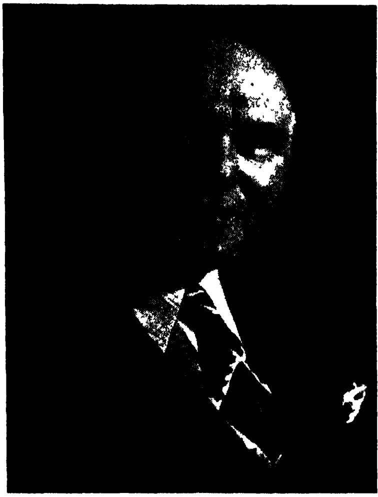
To what extent this philosophy has permeated the organization it is hard to say; but the measure in which these aims are realized in practice clearly determines the degree to which employees take pride in the company and give it their continued loyalty. No organization wholly succeeds in creating an atmosphere of complete freedom for its employees in this respect; but General American seems to approach it more than do many large enterprises. The company seeks to keep in close touch with its employees both by an open-door policy on the part of supervisors and by the usual device of house organs. In early years it published the *General American Magazine;* later, the *GATX Press* and the *GATX Digest.* Excellently edited and done in an attractive format, the *GATX Press* in 1946 won an award of the Industrial Editors Association of Chicago, receiving first place "in recognition of outstanding excellence in the industrial relations publications field."

Finally, as an overall policy of operation, General American endeavors to earn both a stabilized and adequate return for its stockholders on their invested capital. It looks to the future as well as the present; it feels that its usefulness in some fields has only begun; it believes indeed that all "past is prologue." Through research and experiment, by diversification as well as specialization, it aims to make the second fifty years of its history as fruitful, albeit in different ways, as the first fifty. This much can be said: the corporation's management is aware of its problems. If it can coordinate, synthesize and control its future diverse operations as skillfully as it has the less ramified activities of the past—and if it brings to bear the same degrees of energy, technical ability and imagination—then the next five decades may be as conspicuously successful as the half century that now comes to a close.

CHAPTER IX

PHOTOGRAPHS

THE author takes principal responsibility for having selected the pictures appearing on the following pages. He realizes that many more could have been included, several perhaps equally as well as some of these. Yet selections had to be made; and in the cases of personnel, no single criterion was used; importance of function and responsibility, official position, degree of contribution, and length of service were considered.



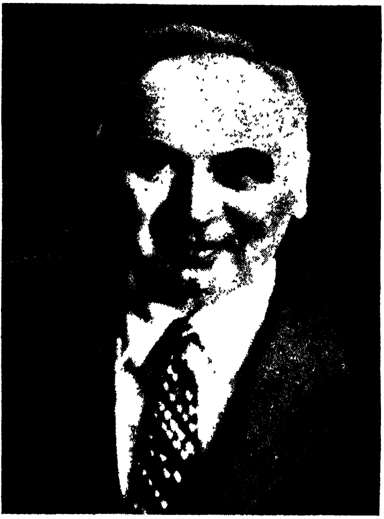
MAX EPSTEIN
founder of the company; president, 1898–1931; chairman, 1931–48; executive committee chairman, 1948–.

LESTER N. SELIG
president, 1931–45; vice-chairman, 1945–48, chairman, 1948– .

SAM LAUD
executive assistant to the president, 1931–45; president, 1945– .

LEROY KRAMER
vice-president, 1925–36; first vice-president, 1936–47; "vice-president retired," 1947– .

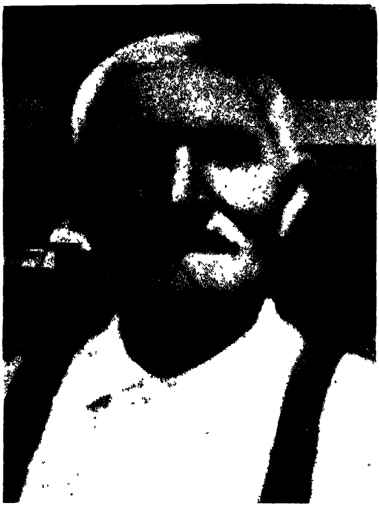
DAVID COPLAND
first employee of the company;
vice-president, 1920 .



BENNETT EPSTEIN
in charge of New York office since
1915, vice-president, 1928 .

HUGO EPSTEIN
president, General American Tank
Storage and Terminal Company,
1925–38.

O. J. PARKS
general superintendent, 1915–28;
mechanical consultant to vice-
president, 1928– .



Oscar Carlstrom
carpenter foreman at East Chicago, 1898–1934; watchman, 1934– .

Wilfred R. Hennig
tank shop inspector, East Chicago, 1910 20; superintendent of tank repairs, 1920– .

Jesse G. Penwell
general foreman at East Chicago, 1918–20; plant manager, 1920–21; plant superintendent, 1921–39.

Fred Klippert
superintendent, Warren and Sharon tank car plants, 1910- .

NELLIE HAIGH
in treasurer's department since 1905, assistant treasurer, 1935–47

THOMAS MATHIESON
with company since 1922, manager, East Chicago, 1926– .

OSCAR BLUMENTHAL
secretary of the company, 1929–35.

REA W. THOMPSON
director of engineering, 1935– .

H. E. COYL
vice-president, in charge of
tank car leasing.

CYRUS L. PHILIPP
vice-president, in charge of
Union Refrigerator Transit

WALTER W. FOWLER
vice-president in charge of exports,
with company since 1920.

D. H. SMITH
vice-president in charge of traffic,
with company since 1919.

William J. Stebler
vice-president in charge of manufacturing.

Jerome S. Selig
vice-president in charge of terminals.

J. C. Vorhauer
vice-president and director of purchases, with company since 1915.

Walter J. Curley
vice-president, with company since 1926

William S. Hefferan, Jr.
vice-president and general counsel.

John P. McFadden
vice-president.

Arthur A. Selonke
controller, with company since 1925.

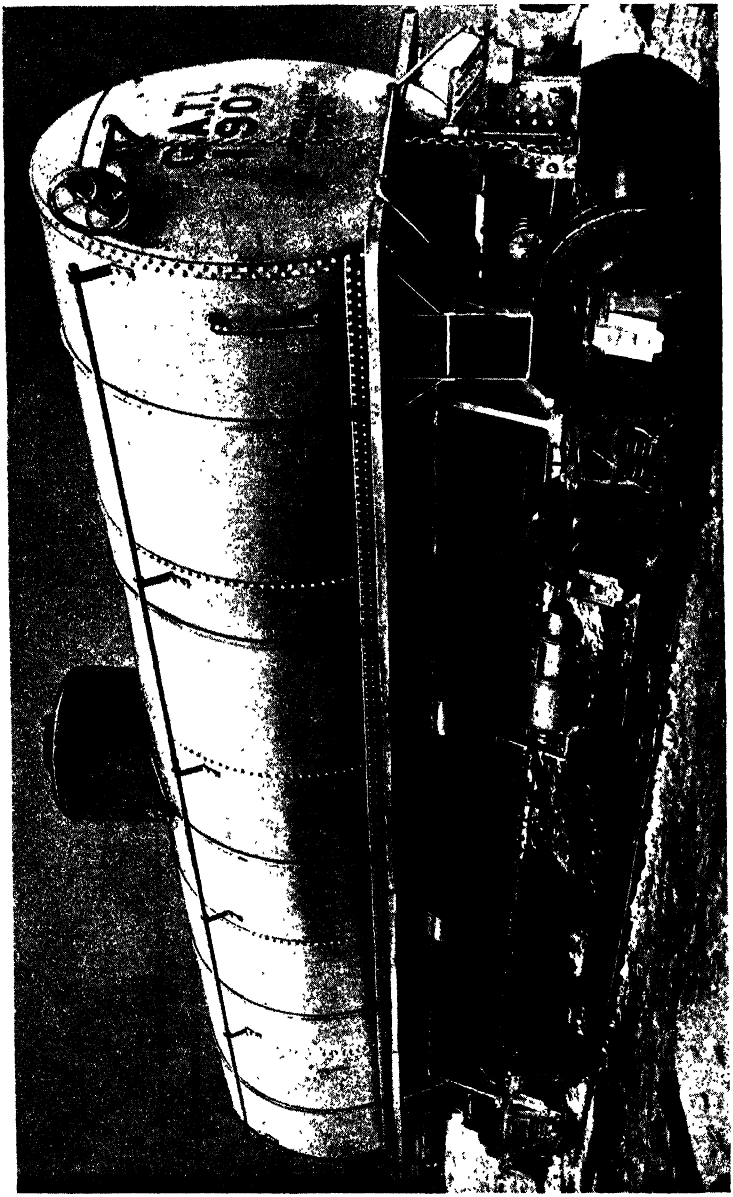
Edwin J. Campbell
chief maintenance officer, with company since 1921.

HERMAN ALTSCHUL
assistant to the president, with company since 1913.

T. E. TENNIS
assistant to the president, formerly manager at Sharon, with company since 1916

FRANK E. SELZ
assistant to the president.

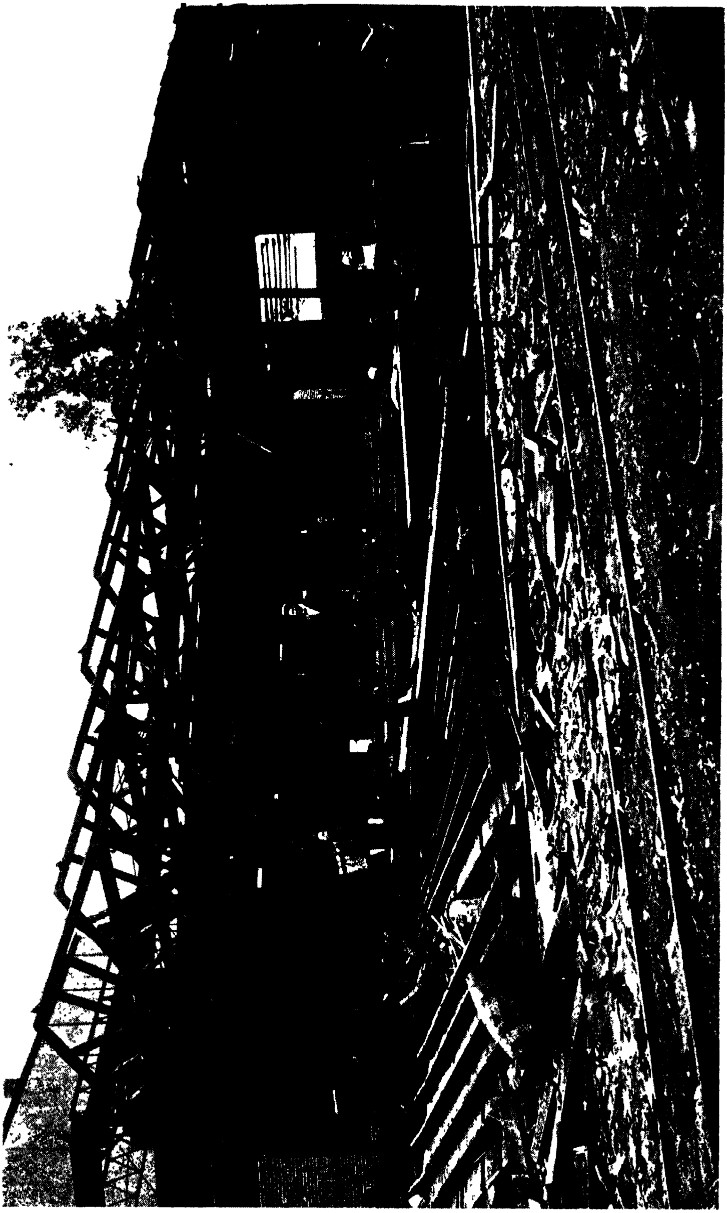
HAROLD D. SKYRM
sales manager, plate and welding division.



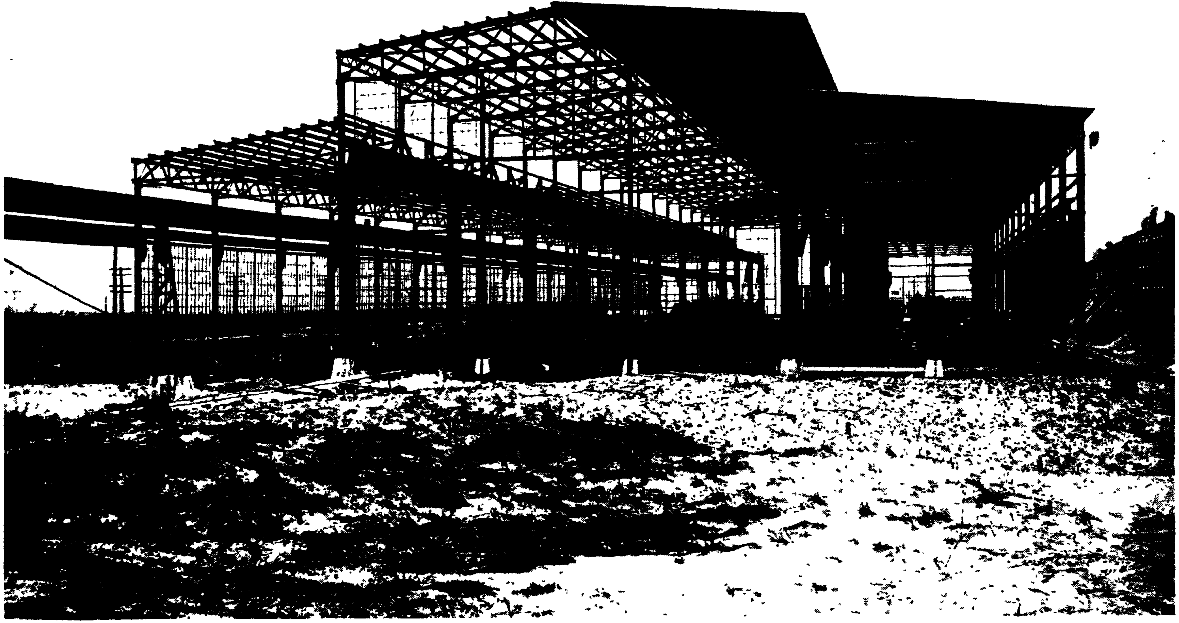
The first car built by the company, in East Chicago in 1907.

The entire supervisory and working force at East Chicago, in front of the main car plant, in 1914.

A group of executive and supervisory personnel in 1916. In the third row center are Max Epstein (with cap), David Copland to the left and O. J. Parks to the right. In the last row, at the extreme right, is Sam Laud.

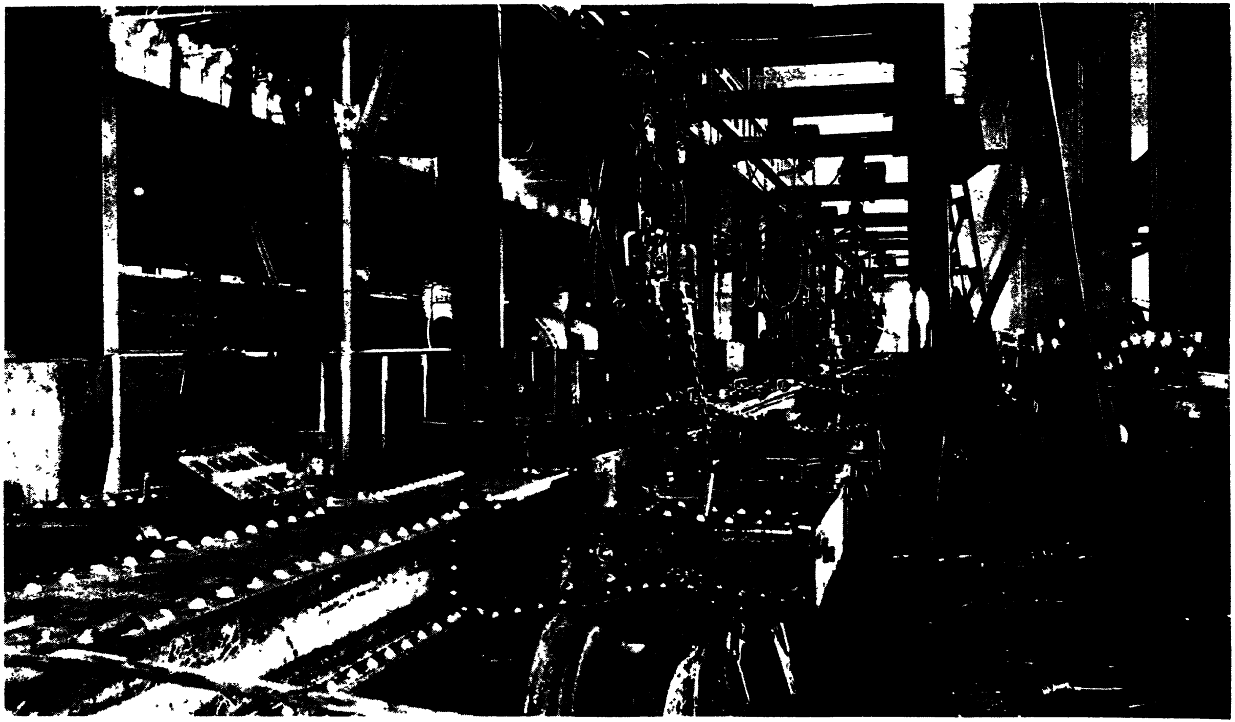


The first shop at Warren. built in 1907 and torn down in 1916. Fred Klippert stands in the center.

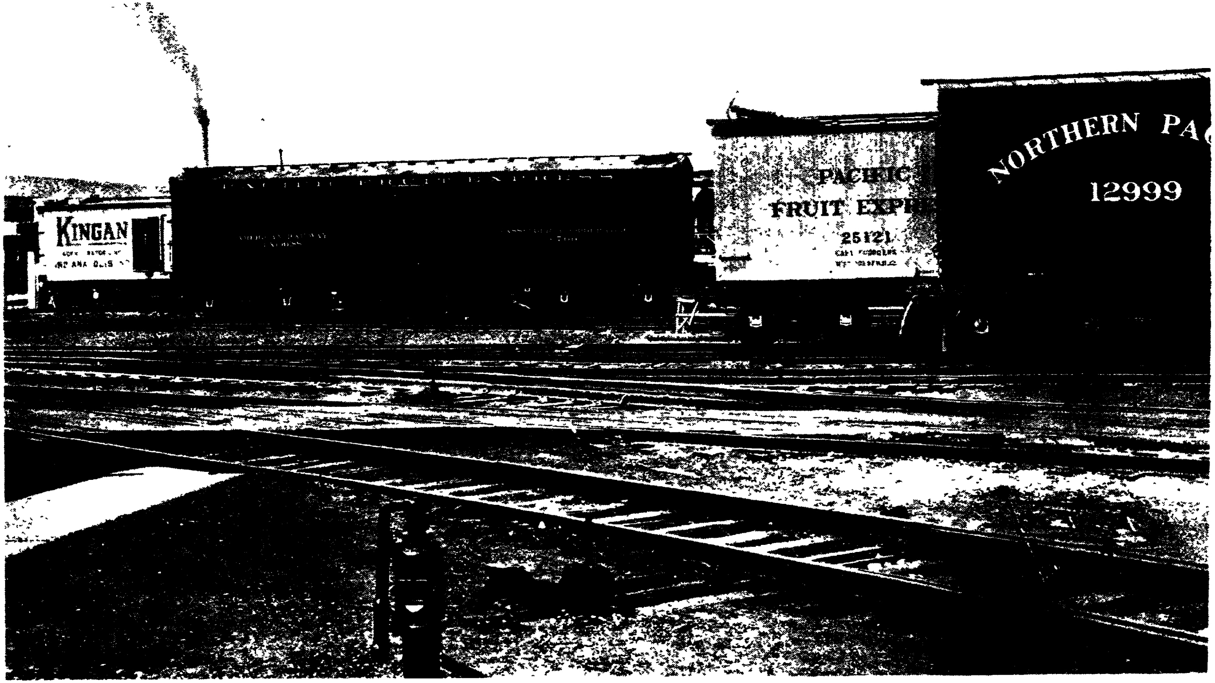


The "big tank shop" under construction at East Chicago in 1916.

East Chicago during the First World War. The underframes at the left are part of an Army tank car order destined for France.

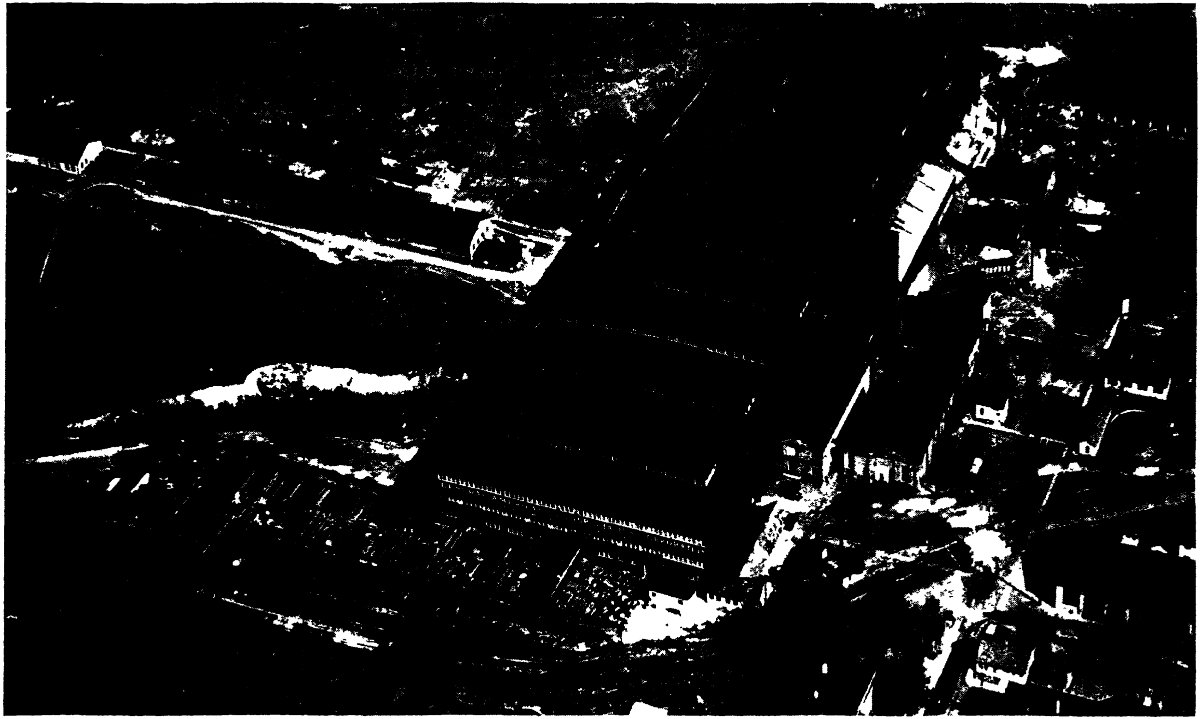


Progressive assembly lines at East Chicago in 1920. Tanks are in line at left, underframes to right.

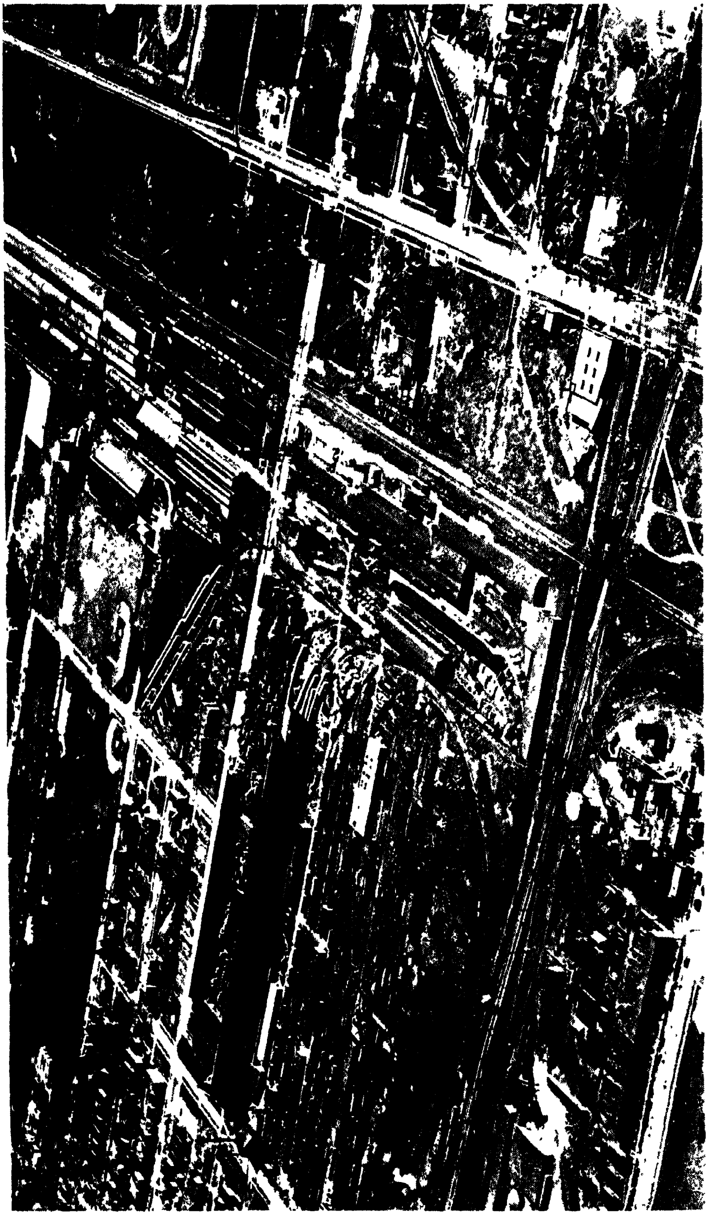


Four types of wood cars in the East Chicago plant, 1923. From left to right: beef car, passenger refrigerator, freight refrigerator, box.

The Sharon tank car plant in 1941.

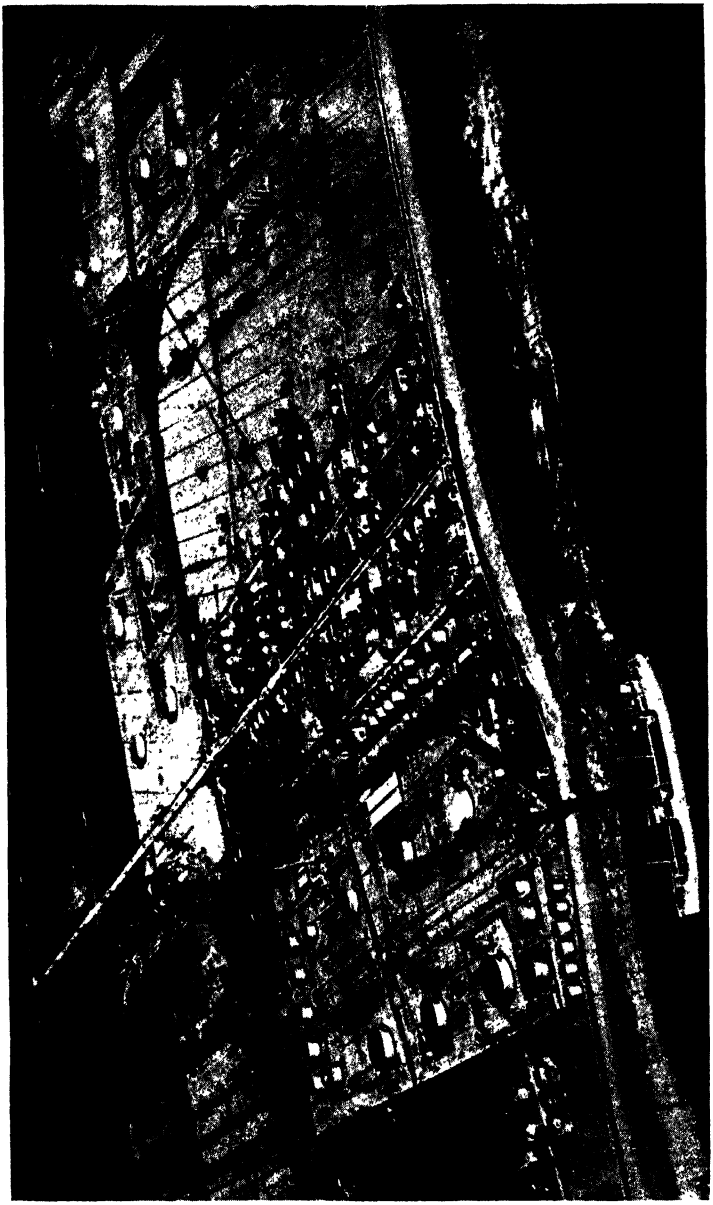


The plate and welding plant at Sharon in 1941.

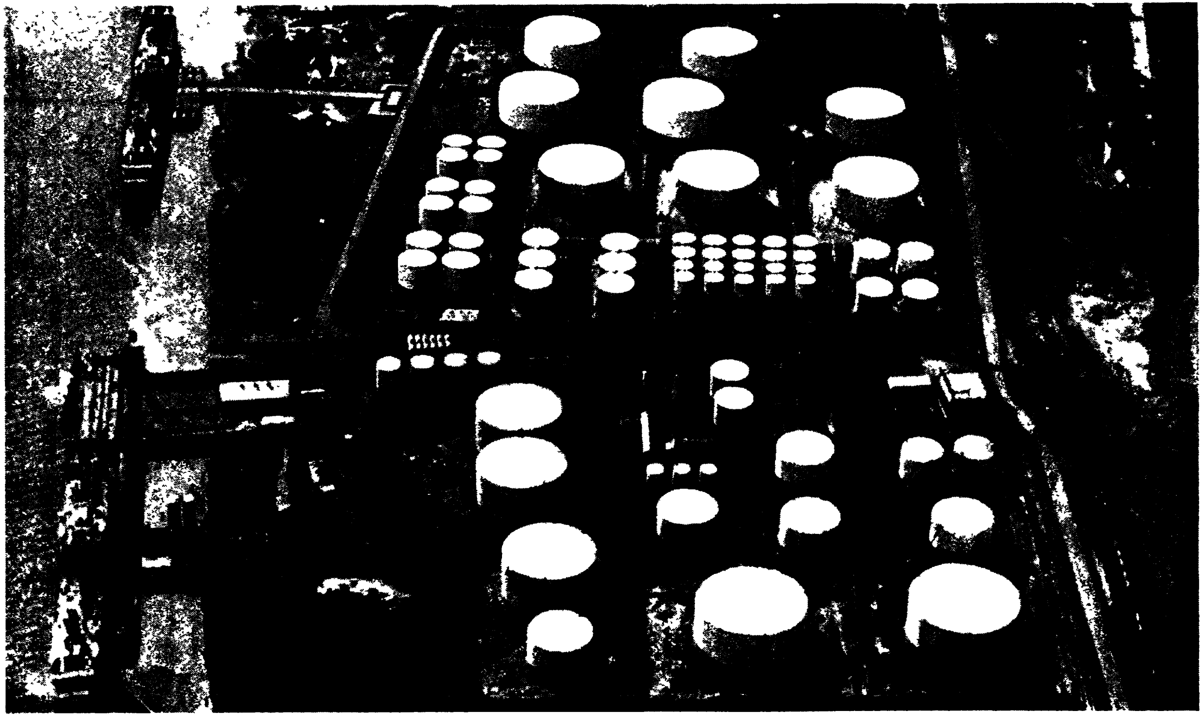


The East Chicago car plant in 1947.

Aerocoach plant at East Chicago in 1947.

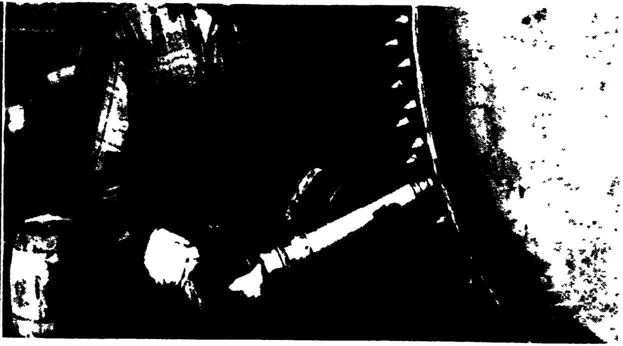


Storage terminal at Goodhope, Louisiana.

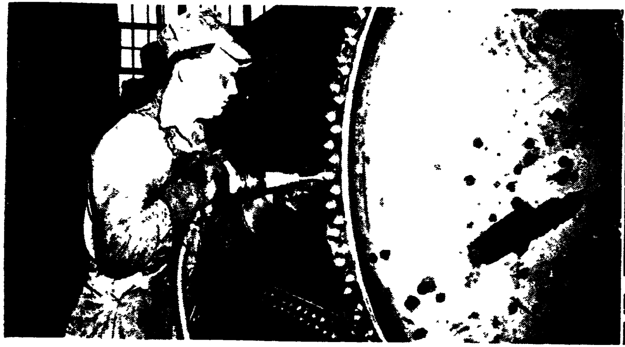


Storage terminal at Carteret, New Jersey.

Reaming operation on tank car.

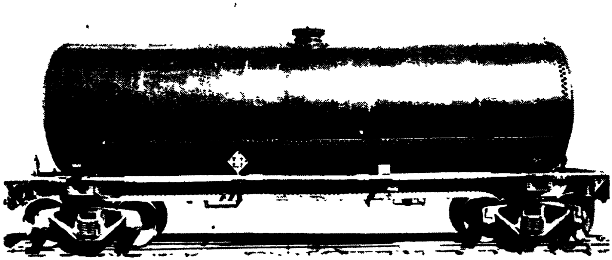


Driving rivets in tank car head.

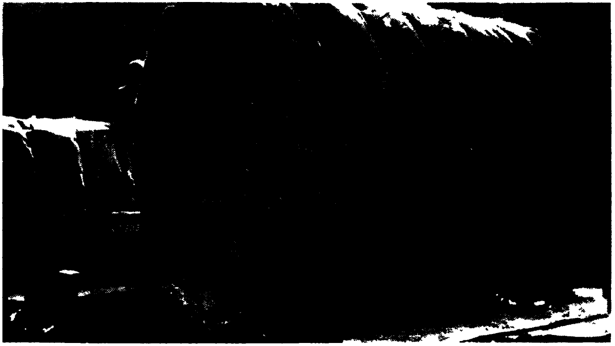


Caulking rivets in tank head.

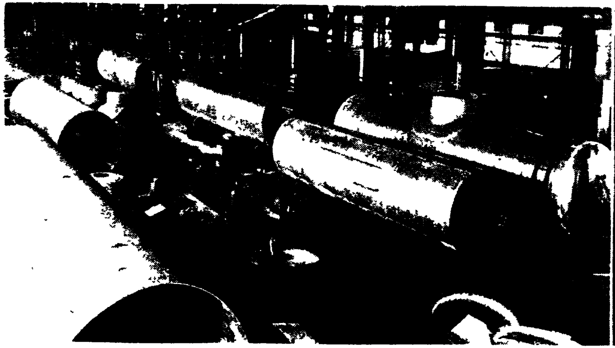
Forty foot plate bending rolls.



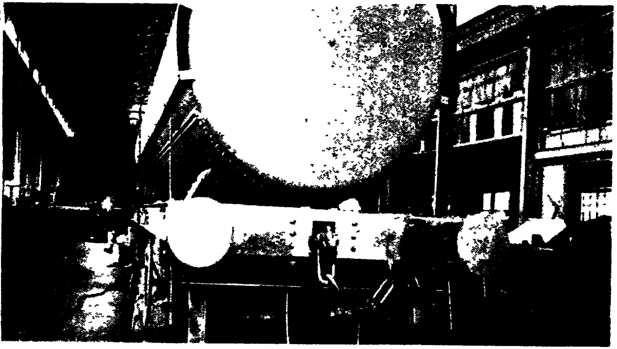
Riveted steel tank before insulation.



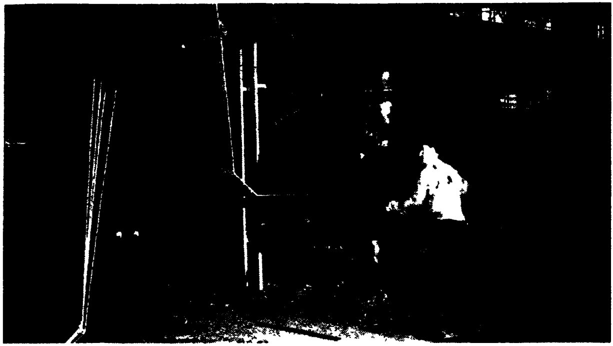
Fibre glass insulation on tank.



Aluminum car tanks.

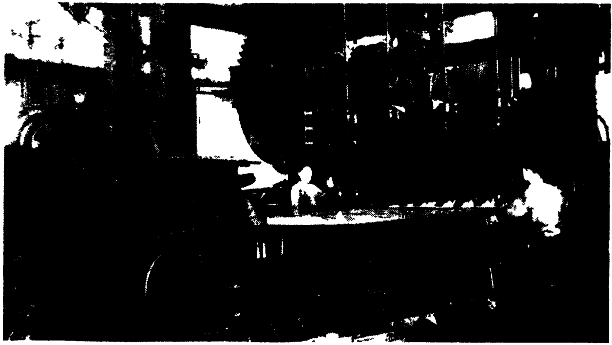


Air-space insulated tank car, for India.



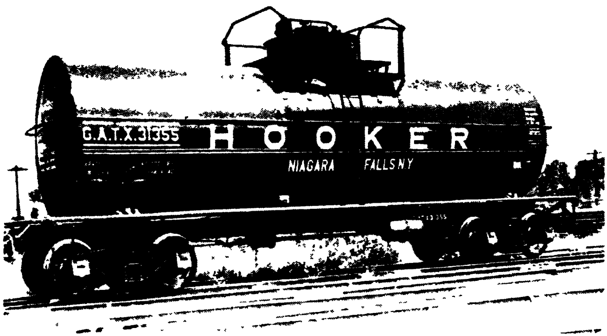
Hydraulic press, Sharon.

750 ton mechanical press, East Chicago.

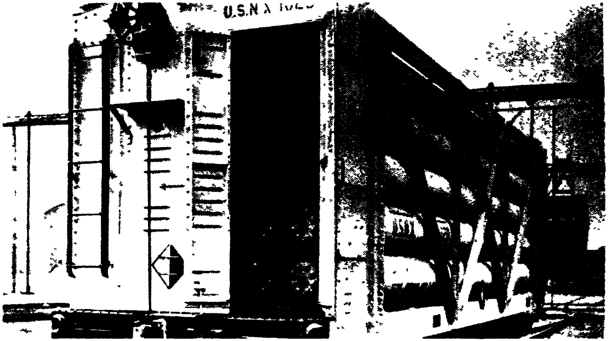


Spacer punching of tank plates, Sharon.

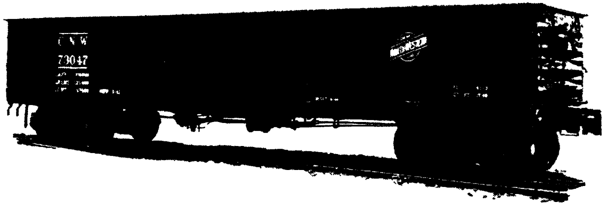
Welding the seam of a pressure vessel.



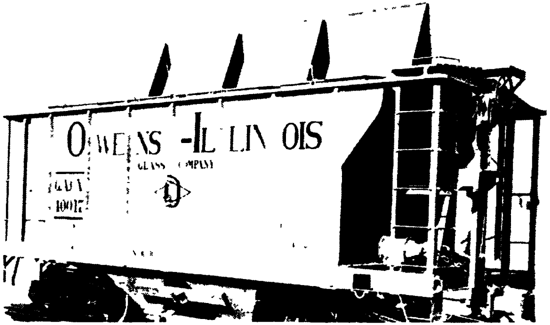
Insulated tank car for chemical company.



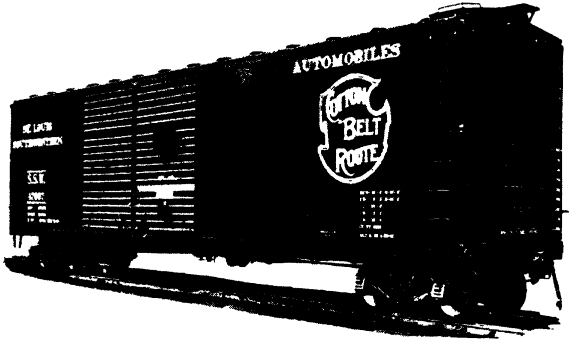
Helium tank car for U. S. Navy.



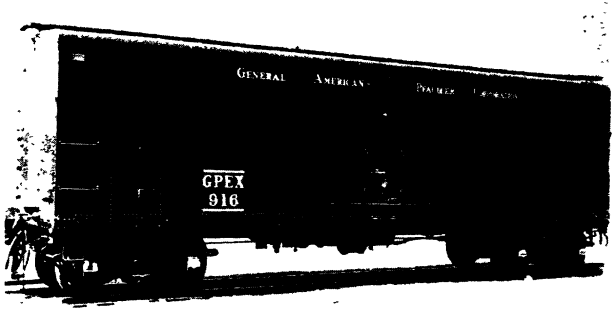
High side gondola car for railroad.



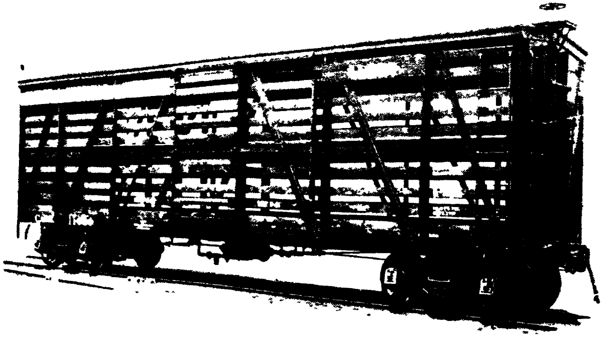
Covered hopper car for glass company.



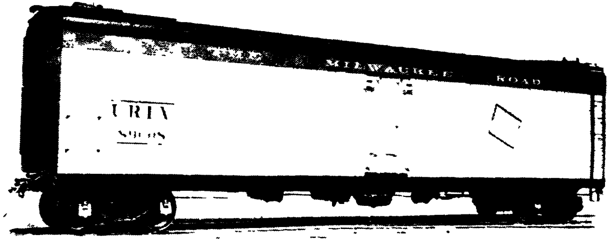
Automobile car.



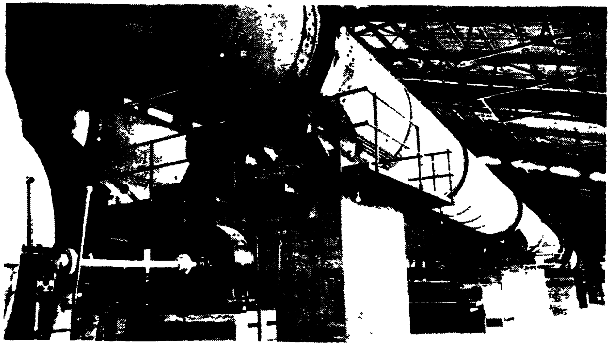
Milk car.



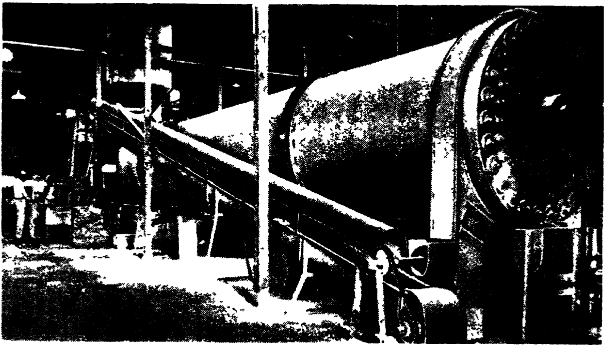
Double deck stock car.



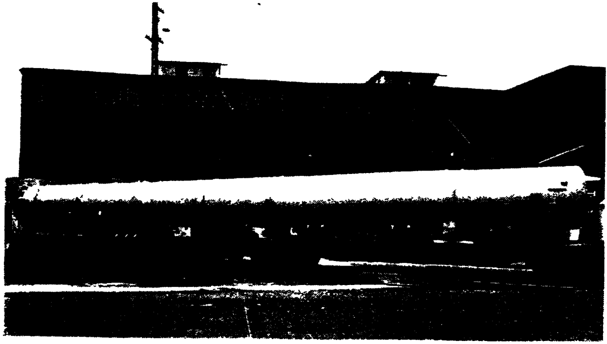
Refrigerator car, riveted construction.



Rotary cement kilns, 343 feet long, made at Sharon.

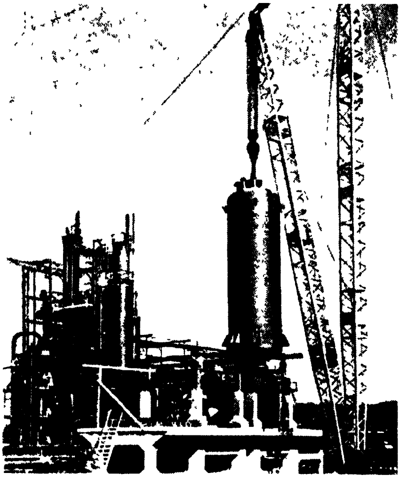


Citrus waste dryer, made at Sharon.

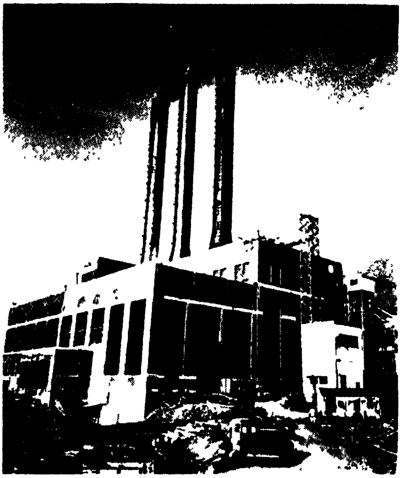


Welded depropanizer tower, made at Sharon.

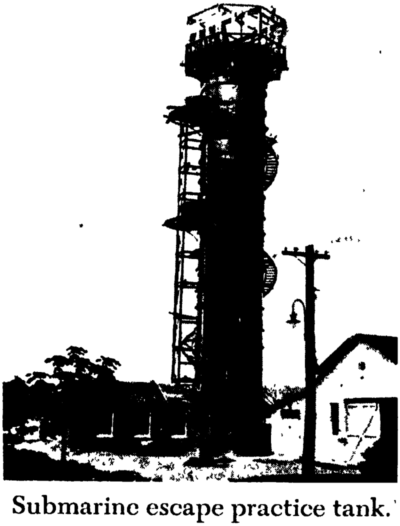
Welded fractionating column, made at Sharon.



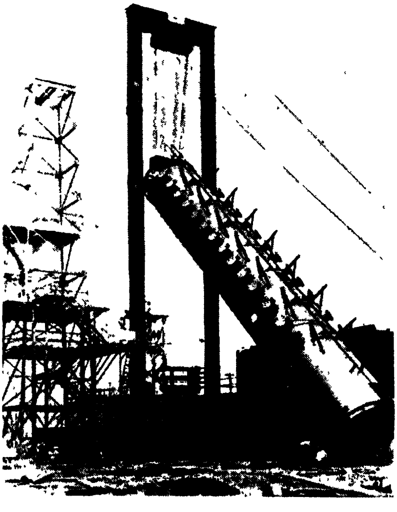
Welded coking drum being installed.



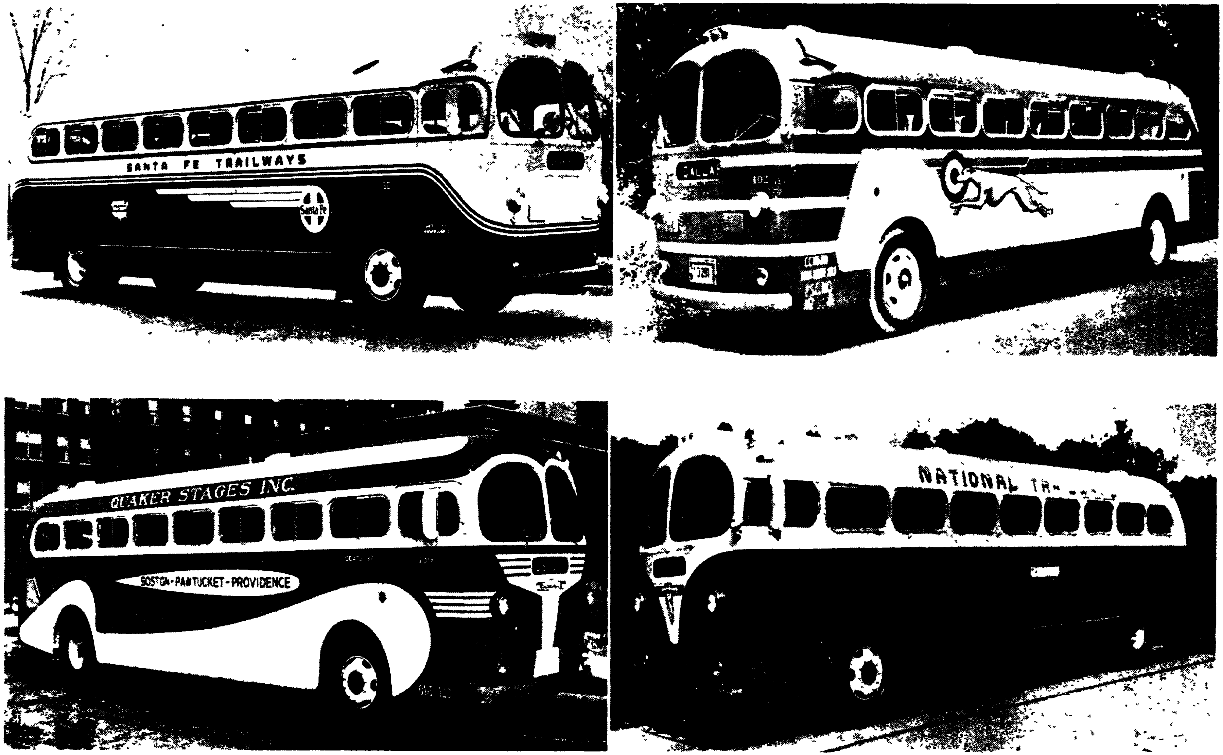
Smokestacks, two riveted and one welded.



Submarine escape practice tank.



Fractionating column for oil company.



Cruiser types of Aerocoaches. built for intercity service.

CHAPTER X

CHRONOLOGICAL TABLE AND PERSONNEL LIST

THE chronological table is by no means complete, but contains some information—such as that relating to office buildings for the Chicago headquarters—that has not been given in the text. The personnel list is the most complete ever put together, but still has some omissions and doubtless may contain a few inaccuracies, although great effort has been made to avoid them.

CHRONOLOGICAL TABLE

The following list presents salient events in General American history in chronological order. Most, although not all, of these events have been discussed in the book and page references for them can be found in the index.

1898	Establishment of the Atlantic Seaboard Despatch, with 28 refrigerator cars.
1901	Chicago offices established in Home Insurance Building.
1902	Incorporation of German-American Car Company, in West Virginia, with capitalization of $50,000.
	Max Epstein transfers assets of Atlantic Seaboard Despatch to the West Virginia company.
	David Copland appointed superintendent of the company.
1903	Company first uses Philadelphia plan of financing cars through equipment trust certificates.
	Fleet exceeds 100 cars.
1904	Order for 100 steel underframe tank cars placed with Standard Steel Car Company.
1905	Fleet numbers 252 cars: 164 tank and 88 refrigerator.
1906	Gross volume—all from services—equals $86,810.

1907	Chicago "shop" transferred from yard tracks in Chicago to Graver property in East Chicago, Indiana.
	Eastern shop started at Warren City Tank and Boiler property in Warren, Ohio.
1908	Gross volume equals nearly one-half million, of which more than $300,000 is from manufacturing.
1910	Euclid Avenue tract of 5 acres bought in East Chicago.
	59 tank cars manufactured in East Chicago during the year.
1911	Chicago offices moved to Harris Trust Building.
1912	Fleet reaches 1,000 cars.
	Five more acres purchased in East Chicago adjacent to plant.
1914	Fabricating machinery (punches, shears, etc.) installed at East Chicago.
1915	Warren plant, previously leased, purchased from Warren City Tank and Boiler Works.
1916	General American Tank Car Corporation incorporated in New York, to hold stock of General American Tank Car Corporation of West Virginia and New York company's stock sold to the public.
	Proceeds of $2,437,500 from stock issue used for expansion; "big steel tank shop" erected at East Chicago.
	First order for 1,000 cars received.
	First chlorine car built.
1919	Gondola cars built for export to China.
1920	Cars built for Union Tank Line.
1921	Fleet exceeds the 10,000 car mark.
1923	Gross income reaches the $25,000,000 mark.
1924	Plans made to expand wood car production.
1925	First storage terminal established at Goodhope.
	Chicago offices moved to Continental-Illinois Bank Building.
1926	Federal Tank Line acquired.
1927	Sharon tank car plant purchased.
1928	Quaker City car lines acquired.
	Standard Tank Car Corporation line acquired.
1929	Elias Mayer elected president.
	Union Refrigerator Transit line acquired.
1930	Swift and Company line purchased.
1931	Lester N. Selig elected president.
1932	Rock Island Railroad System's refrigerator car fleet acquired.
	Car manufacturing business falls off to almost zero.
	Dividends continued on common stock.

1933 Argentine (Kansas) plant acquired.
Carteret terminal acquired.
1934 Corpus Christi terminal built.
1935 Pension plan for employees adopted.
Fleet numbers in excess of 50,000 cars.
Chicago offices moved to Field Building.
1936 Payments of $19,944,989 made to reduce funded debt.
Texas Company fleet acquired.
Precooling Corporation established.
Interest in Pressed Steel Car Company acquired.
1937 Gross income exceeds $45,000,000.
1938 Barkley-Grow (aircraft) Company acquired, later liquidated.
1939 Aerocoach division founded.
1940 Petroleum Iron Works plant purchased for plate and welding production.
1941 Shell, army tank and munitions production begun on defense contracts.
1942 Gross income exceeds $75,000,000.
1943 Process equipment division established.
1944 Memorial scholarship plan inaugurated.
1945 Moulded plastics production begun.
Army-Navy "E" award and Navy Certificate of Merit received.
Sam Laud elected president.
1946 Sixty per cent stock interest in Aerocoach Corporation increased to full ownership.
Malek rice process acquired and developed.
Research laboratory established.
New York office building, at 10 East 49th Street, purchased and occupied.
Plastics production begun at East Chicago.
1947 Fifteen million dollar preferred issue brought out.
New Aerocoach plant occupied at East Chicago.

LIST OF PERSONNEL

Included in this list are key members of the General American organization, as it exists in 1947 together with the names of retired, resigned or deceased persons who have previously occupied operating or staff positions of significance. Officers, executives, supervisory employees, and (in the cases of the East Chicago and Sharon plants) foremen are all included, to the fullest extent to which space and research limitations have permitted. While the list is not historically complete, it is believed to be reasonably comprehensive, particularly for the period of the last fifteen years. The date following each employee's name represents the year (in several instances, the approximate year) in which he first joined the General American organization. The titles used are not in all instances precise, except for officers, but are the best available condensed descriptions of the person's function in the latest position held. An "R" means retired or resigned; a "D" means deceased. At the end of the list appear the names of several persons who would have been included had more complete information been available.

Abernathy, James D., 1916, foreman, erection shop, Sharon
Abram, M. Edward, 1927, assistant counsel
Acworth, John S., 1916, assistant vice-president, repairs
Alexander, Waid P., 1947, field engineer, Sharon
Allen, Oscar L., 1918, superintendent, Kansas City
Alquist, N. A., 1916, manager, East Chicago (R)
Altschul, Herman, 1913, assistant to president, car sales
Aylward, D. E., 1932, superintendent of car service, U.R.T., Milwaukee
Ayres, J. P., 1925, sales representative, New Orleans
Baker, Harry L., 1946, foreman, fitters, Sharon
Baker, Kenneth M., 1944, manager of manufacturing, dryers
Baker, L. H., 1935, chief expediter, purchases
Ballman, John L., 1923, plant auditor, plastics, East Chicago
Barnes, Marshall, 1941, foreman, burning, Sharon
Bateson, N., 1943, assistant chief engineer, Aerocoach
Bauer, Mary M., 1934, supervisor, payroll, Sharon
Baxter, Ernest, 1918, foreman, layout, Sharon
Beavers, Edward A., 1934, foreman, wood car repairs stores, East Chicago
Becker, August C., 1917, foreman, electric shop, East Chicago
Beiriger, L. G., 1939, employment manager, Aerocoach
Bell, Ferdinand C., 1929, police chief, East Chicago
Bender, John M., 1930, superintendent, Argentine
Benko, Michael, 1933, industrial engineer, East Chicago
Bennett, Ralph S., 1947, foreman, plate shop, Sharon
Bertenshaw, L. G., 1942, assistant director of engineering
Besselman, Arthur J., 1934, superintendent, Corpus Christi terminal

Besselman, W. H., 1935, superintendent, Westwego terminal
Biederman, E. B., 1930, assistant purchasing agent, process equipment and plate and welding
Biesel, Robert, export department, 1945
Biesen, Herman E., 1933, foreman, shipping track, East Chicago
Bill, Clifford E., 1943, manager, dryer sales
Birmingham, H. J., 1927, traffic manager
Blue, John F., 1920, foreman, plate and welding, Sharon
Blumenthal, Oscar, 1927, secretary (D)
Booth, Everett L., 1936, general storekeeper, plastics, East Chicago
Bowman, Herbert H., 1919, foreman, plate shop, Sharon
Branfield, Charles, 1917, foreman, erection shop
Braught, John, 1945, plant manager, plastics, Milwaukee
Brinckmann, Carl H., 1919, assistant general superintendent, East Chicago
Brown, Claud G., 1930, foreman, repair department
Brown, Harry S., 1923, safety engineer, East Chicago
Brown, Robert F., 1947, director
Bublis, William V., 1934, employment manager, East Chicago
Buck, Thomas, 1923, foreman, plate shop, Sharon
Buckner, W. A., 1933, superintendent, Houston terminal
Butkovich, Peter, 1914, foreman, track and maintenance, East Chicago
Butler, Henry, 1916, vice-president (R)
Butts, B., F., 1943, supervisor material control, Aerocoach
Cain, J. Frank, 1928, foreman, carpenters, Sharon
Campbell, Edwin J., 1921, chief maintenance officer
Cantrell, Lewis V., 1933, foreman, pneumatic tool, East Chicago
Carano, Daniel, 1942, foreman, weld shop, Sharon
Carlstrom, Oscar, 1898, carpenter foreman
Cassard, G. J., Jr., 1925, superintendent, Goodhope terminal
Cartwright, Eugene G., 1947, manager, industrial relations department, Sharon
Cassady, J. M., 1922, chief clerk, purchasing, freight and tank cars
Cave, William J., 1941, employment manager, plate and welding, Sharon
Chapman, C. P., 1927, accounting and engineering
Chapman, G. C., 1939, foreman, paint, Aerocoach
Chelminski, Roman, 1944, assistant technical director, process equipment (R)
Chittum, Wilton H., 1947, supervisor, tank car accounting, Sharon

Choppa, John J., 1935, foreman, weld shop
Christensen, Oluf J., 1934, foreman, milk car department, East Chicago
Clark, Glade J., 1920, foreman, electrical, Sharon
Clark, James T., 1923, foreman, wheel and axle, Sharon
Clark, John, 1947, foreman, inspection department, tank car division, Sharon
Cline, James W., 1916, superintendent, North Fort Worth
Coleman, Lawrence, 1928, metallurgist, Sharon
Collier, LaMont J., 1922, superintendent, Sioux City
Cooper, J., 1943, assistant chief inspector, Aerocoach
Copland, David, 1901, vice-president
Copland, W. H., 1916, office manager, East Chicago (D)
Cordell, Joseph N., 1927, assistant to vice-president, terminals
Coscia, Charles C., 1945, testing engineer, East Chicago
Covert, M. F., 1928, general superintendent, wood cars
Coyl, H. E., 1926, vice-president
Coyle, Charles H., 1912, assistant to president (R)
Curley, Walter J., 1926, vice-president
Dahlkamp, Joseph A., 1936, foreman, steel car, East Chicago
Dalby, H. G., 1934, assistant plant auditor, Aerocoach
DeBold, Joseph P., 1921, foreman, power house, East Chicago
DeCamp, Wayne V., 1941, chief inspector, East Chicago
Dennis, William C., 1918, foreman, forge shop, Sharon
Dickey, George D., 1944, office manager, New York
Dickinson, Philemon, 1916, director
Dickson, G. V., 1944, sales engineer
Dolan, Edward J., 1933, superintendent, Carteret terminal
Domke, Allen M., 1925, foreman, plate department, East Chicago
Donaldson, Claude W., 1925, foreman, finishing, Sharon
Donovan, Henry, 1922, manager, East Chicago (R)
Douglas, Robin, 1939, advertising manager
Doyle, E. J., 1934, sales representative, Seattle
Duff, C. A., 1919, cost and production manager, East Chicago (R)
Duffy, R. P., 1929, car agent, U.R.T., Milwaukee
Duncan, Robert C., 1942, foreman, milk car stores, East Chicago
Dunker, Agnes H., 1944, office manager, Turbo-Mixer
Dunn, Ella, 1940, assistant treasurer
Dunn, Robert R., 1915, vice-president (D)
Durbin, John H., 1923, assistant purchasing agent, East Chicago

Durschlag, Arthur C., 1936, chief draftsman, Sharon
Eakins, I. A., 1915, superintendent of equipment (D)
Eartly, Charles H., 1920, foreman, pipe shop, East Chicago
Ellis, James O., 1927, foreman, forge shop, East Chicago
Elsea, Roby, 1916, superintendent, East St. Louis
Engman, Eugene G., 1945, president, Eclipse Moulded Products Co. (R)
Engman, Ralph P., 1945, tool room manager, plastics, Milwaukee
Enk, Ralph W., 1920, chief clerk, repair sales
Ennis, W. J., 1940, assistant purchasing agent, Aerocoach
Epstein, Bennett, 1912, vice-president
Epstein, Hugo, 1917, chief executive, storage terminals (D)
Epstein, Max, 1898, chairman
Esgar, H. C., 1944, chief engineer, plate and welding
Evans, Ben F., 1924, foreman, finishing, Sharon
Evans, R. D., 1939, foreman, line assembly, Aerocoach
Evans, R. H., 1939, plant superintendent, Aerocoach
Evans, V., 1939, foreman, fabrication, Aerocoach
Everall, Robert W., 1942, field engineer, Sharon
Everett, George E., 1944, assistant to vice-president
Evers, Neal, 1944, welding engineering, East Chicago
Farquhar, Arthur G., 1929, foreman, erection shop, Sharon
Feldman, Maurice J., 1920, secretary
Ferderber, Leo J., 1911, manager, precooling division
Ferrario, Anthony A., 1930, foreman, plate shop, Sharon
Finck, Sidney, 1917, cost accountant (R)
Fisk, Elmer A., 1920, master mechanic, East Chicago
FitzJohn, H. A., 1939, vice-president and sales manager, Aerocoach
Foltz, Lewis A., 1913, foreman, plate shop, Sharon
Fowler, Walter W., 1920, vice-president
Fox, Joseph H., 1925, foreman, templet shop, East Chicago
Fredericks, W. G., 1929, purchasing agent, plastics
Frenkel, Robert, 1941, assistant to vice-president
Frey, James S., 1933, manager, tank car division, Sharon
Friedberg, Louis A., 1934, foreman, tin shop, East Chicago
Friend, R. E., 1941, car service agent, Philadelphia
Frye, Clarence L., 1935, foreman, powerhouse, Sharon
Frye, Fred, 1917, foreman, plate shop, Sharon
Gaebler, Alexander H., 1931, car superintendent, U. S. Yards
Gaedtke, John H., 1920, foreman, car punch, special car and templet shops, East Chicago

Gahagan, H. P., 1939, plant engineer, Aerocoach
Gardner, E. H., 1930, car service agent, Chicago
Garlock, Fred G., 1920, chief engineer, freight cars
Gatte, Peter H., 1943, safety supervisor, Sharon
Giovanelli, Dominic, 1937, foreman, steam rack, Sharon
Gill, Joseph B., 1925, foreman, carpenter shop, Sharon
Gissler, F. G., 1921, car service agent, Dallas
Goehring, Sidney L., 1939, foreman, yards and export, Sharon
Gould, E., 1939, foreman, welding, Aerocoach
Grace, Floyd L., 1943, general warehouse foreman, plate and welding, Sharon
Graham, Arthur H., 1944, general manager, Sharon (R)
Graham, W. O., 1927, general purchasing agent, Aerocoach
Graves, Charles T., 1941, engineer, East Chicago
Green, William J., 1925, superintendent, machine shop, Sharon
Greve, Gilbert, 1935, finishing foreman, plastics, Milwaukee
Gross, L. S., 1923, vice-president and general manager, Aerocoach
Gutzeit, Dr. G., 1944, director, research and testing laboratory
Haehnel, Carl O., 1915, foreman, general maintenance, East Chicago
Haigh, Nellie A., 1906, assistant treasurer (R)
Hall, Carl W., 1942, general foreman, weld shop, Sharon
Hallman, M., 1941, assistant service manager, Aerocoach
Hames, George S., 1942, car service agent, Atlanta
Hamm, Roy E., 1923, superintendent, Elkhart
Hanfler, Albert F., 1919, car agent, Cleveland
Hanley, Maryellen, 1945, chief analyst, East Chicago
Hansen, George L., 1928, general superintendent, Plant No. 1, East Chicago
Hansen, Olaf W., 1920, chief die designer, East Chicago
Harris, Eugene G., 1912, storekeeper, plate and welding, Sharon
Harvoj, John A., 1920, superintendent, South Omaha
Hassel, Harold S., 1918, plant auditor, Sharon
Havling, Ralph, 1942, foreman, bolt and rivet stores, East Chicago
Hayes, H. R., 1935, assistant supervisor, material control, Aerocoach
Heasley, Joseph P., 1942, foreman, repair department, Sharon
Heim, Wilbur G., 1944, foreman, compression, plastics, Milwaukee
Hefferan, W. S., Jr., 1931, vice-president and general counsel
Hennebohle, Frank, 1918, foreman, machine shop, East Chicago
Hennke, William R., 1946, production control supervisor, plastics, East Chicago
Hennig, Wilfred R., 1910, tank repair superintendent

Herche, Frank A., 1947, foreman, finishing department, plastics, East Chicago
Hickey, Robert E., 1940, assistant purchasing agent, Sharon
Hicks, D. J., 1929, purchasing agent, freight and tank cars
Hines, Carl R., 1942, sales representative, San Francisco
Hoch, George W., 1944, chief draftsman, Turbo-Mixer
Hummer, Robert D., 1946, general storekeeper, Sharon
Hunt, Harry B. Sr., 1922, assistant general superintendent, Sharon
Hunter, Henry M., 1944, general sales manager, process equipment
Ingraham, C. G., 1922, general purchasing agent
Irwin, Henry, 1925, plant engineer, East Chicago
James, John S., 1916, chief of police, tank car division, Sharon
Jensen, Louis L., 1940, superintendent, Indianapolis
Johnson, R. H., 1944, chassis engineer, Aerocoach
Johnson, Sheridan R., 1945, chief inspector, plate and welding, Sharon
Jones, Robert, 1918, foreman, plate shop, Sharon
Jones, William I., 1922, manager of industrial relations, East Chicago
Joys, Carl C. Jr., 1943, special sales agent
Karger, Frank S., 1935, chief metallurgist, East Chicago
Kearnes, Joseph, 1919, foreman, plate shop, Sharon
Keen, R. O., 1946, shift foreman, compression, plastics, East Chicago
Kerseg, W. F., 1945, assistant chief engineer, plastics division
Kiekhofer, B. A., 1929, assistant to president and assistant secretary
Kirkeiner, Harold W., 1943, foreman, shipping department, East Chicago
Kleist, Roy A., 1933, superintendent, Milwaukee (URT Shop)
Klippert, Fred, 1910, general superintendent, Sharon
Knowles, C. L., 1944, technical director, process equipment (R)
Koehler, O., 1946, general foreman, compression, plastics, East Chicago
Kopchak, Michael, 1936, construction foreman, steel car, East Chicago
Kraffmiller, M. P., 1914, treasurer (R)
Kramer, LeRoy, 1925, executive vice-president (R)
Kramer, L., Jr., 1939, assistant to vice-president, Aerocoach
Krukowski, Sylvester, 1921, track foreman, wood car, East Chicago
Kubens, Sheldon W., 1929, chief clerk, U.R.T.
Kuhlke, Oliver H., 1947, technical instructor, Sharon
Kuster, Otto R., 1944, chief engineer, process equipment (R)
Lamport, Richard, 1939, assistant vice-president, plastics

Lantz, Lawrence R., 1923, foreman, wheel and axle, East Chicago
Larson, E. J., 1937, car service agent, Chicago
Laub, D., 1943, foreman, service repairs, Aerocoach
Laud, Sam, 1916, president
Lawler, Frederick W., 1946, senior clerk, job evaluation, Sharon
Lawrence, W. R., 1929, plant auditor, Aerocoach
LeBolt, John M., 1946, plastics testing engineer, East Chicago
Lehman, Bert O., 1920, foreman, building construction, East Chicago
Lenhart, L. A., 1919, manager, East Chicago (R)
Lewis, R., 1946, chief, plant protection, Aerocoach
Lindberg, Ramon I., 1944, research engineer, East Chicago
Lippman, Leonard, 1938, secretary's department
Lissauer, A. W., 1944, vice-president (R)
Lloyd, Robert, 1945, foreman, machine shop, Sharon
Longanecker, Robert P., 1920, photographer, East Chicago
Lyons, Emerson J., 1944, sales engineer, process equipment
McAllister, Jacob M., 1935, track foreman, steel car, East Chicago
McAllister, John E., 1927, paymaster, East Chicago
McCarthy, Daniel B., 1919, sales representative, St. Louis
McClelland, Walter A., 1922, general foreman, wood car, East Chicago
McCord, Robert P., 1929, assistant to president, U.R.T. (D)
McDaniel, D., 1940, night general foreman, Aerocoach
McFadden, J. P., 1929, sales representative, New York; assistant secretary
McGrath, John E., 1929, sales representative, Pittsburgh
McLain, Roy Allen, 1918, superintendent, South St. Paul
McMullen, Vern C., 1926, plant auditor, East Chicago
McNally, J. P., 1911, manager, East Chicago (D)
Mackey, Walter Bernard, 1908, superintendent, Chicago, U. S. Yards
Mangels, Harry M., 1934, sales manager, precooling division
Manion, Edward, 1929, foreman, riggers, Sharon
Martin, Arthur E., 1923, assistant traffic manager
Martin, H., 1939, foreman, tube fabrication, Aerocoach
Martin, J. Frank, 1941, superintendent, field erection, Sharon
Massopust, C. F., 1945, chief engineer, plastics division
Mathews, Richard, 1920, foreman, pipe fitters, Sharon
Mathieson, Thomas A., 1919, assistant to vice-president, and manager, East Chicago
Mayer, Elias, 1929, president (D)

Mears, D., 1943, foreman, machine shop, Aerocoach
Meisel, R. J., 1946, supervisory, maintenance, plastics, East Chicago
Michel, John, 1938, proprietary products sales manager, plastics
Middleton, A. C., 1920, car service agent, Cleveland
Miller, Arthur O., 1928, manager, plate-welding division, Sharon
Miller, Samuel A., 1935, foreman, weld shop, Sharon
Mitchell, C., 1940, supervisor experimental engineering, Aerocoach
Mitchell, D., 1937, shipping department foreman, Aerocoach
Mitchell, Harry A., 1945, assistant to the comptroller, Sharon
Moon, Ellis E., 1918, general foreman, Sharon
Morgan, Hubert L., 1927, supervisor, repair department, Sharon
Morris, S. D., 1935, purchasing agent, Aerocoach
Morrissey, John P., 1916, refrigerator car division, Chicago
Morrow, R., 1942, supervisor production planning, Aerocoach
Moseley, George, 1937, assistant sales manager, plastics division
Moss, T. C., 1926, sales representative, Dallas
Motz, G., 1946, shift foreman, injection, plastics, East Chicago
Moul, James E., 1944, president, Turbo-Mixer
Mueller, H., 1945, assistant plant engineer, Aerocoach
Mull, J. R., 1936, assistant chief engineer, freight cars
Mullen, Chester L., 1925, buyer, purchasing department, Sharon
Mullen, Roy L., 1936, assistant storekeeper, tank car division, Sharon
Murry, M. F., 1934, assistant plant superintendent, Aerocoach
Musser, Ralph T., 1919, manager, West Coast Sales (D)
Mussetter, Claude W., 1930, foreman, wood mill, East Chicago
Myers, L. Carl, 1927, sales representative, Sharon
Nelson, Charles A., 1941, chief timekeeper, East Chicago
O'Hara, Lee M., 1944, pilot plant engineer, East Chicago
Ollesheimer, Henry, 1930, director (D)
Olsen, James F., 1944, Chicago branch manager, process equipment
O'Neil, Harry J., 1937, foreman, compression, plastics, Milwaukee
Orne, A. A., 1930, general service manager, Aerocoach
Overton, Glen, 1944, president, American Machine Co.
Paetsch, P. P., 1941, assistant service manager, Aerocoach
Parks, Ostrander J., 1915, mechanical assistant to vice-president
Pallardy, E. B., 1938, car service agent
Pearrell, Roy C., 1940, foreman, weld shop, Sharon
Peck, Fred W., 1923, foreman, steel stores, East Chicago
Pelton, L. P., 1920, inspector of purchases, Sharon
Pelzman, Max, 1927, new car sales

Penich, Peter J., 1921, track foreman, wood car, East Chicago
Penwell, Jesse, 1918, general superintendent, East Chicago (D)
Peters, Herman G., 1947, general foreman, East Chicago
Petersen, William G., 1927, superintendent, East Chicago
Petry, Clayton H., 1944, purchasing agent, Turbo-Mixer
Philipp, Cyrus L., 1929, vice-president
Pillifant, James, 1917, foreman, plate shop, Sharon
Pillifant, Thomas G., 1919, plate shop superintendent, Sharon
Piper, Frank J., 1922, traffic manager, East Chicago
Pitts, Ralph S., 1946, assistant to supervisor, purchases, Sharon
Plattner, Fred J., 1937, general superintendent, storage terminals
Porte, Ned., 1946, plant manager, plastics, East Chicago
Pooler, Charles E., 1923, manager, wood car shop, East Chicago
Preston, C. F., 1945, treasurer, Eclipse Moulded Products Co.
Priebe, Arthur W., 1944, general superintendent, Sharon
Puntney, B., 1946, shift foreman, injection, plastics, East Chicago
Purvies, Harry, 1937, general welding foreman, plate shop, Sharon
Quinn, J., 1947, powerhouse foreman, Aerocoach
Racek, John E., 1943, chief clerk, terminals
Ragan, Ray E., 1923, foreman, paint shop, East Chicago
Ranck, James F., 1920, chief inspector, tank car division, Sharon
Randolph, Robert S., 1942, sales representative, Tulsa
Raney, Orvil D., 1939, production manager, tank car division, Sharon
Reimer, Aloysius V., 1935, assistant superintendent, Galena Park terminal.
Remiker, George, 1943, assistant plant manager, plastics, Milwaukee
Richards, George W., 1947, foreman, plate shop, Sharon
Riggs, George E., 1919, chief timekeeper, plate and welding, Sharon
Ristau, Harold J., 1946, production manager, plate and welding, Sharon
Roark, Robert J., 1927, sales representative, Houston
Rogers, G. J., 1941, chief inspector, Aerocoach
Rogner, Hosea E., 1918, assistant manager, tank car division, Sharon
Rosenau, Ernest A., 1924, assistant plant auditor, East Chicago
Rosenfelt, David, 1908, director of engineering (D)
Rothenbaum, E., 1920, chief clerk, purchases
Ross, Bruce J., 1931, assistant to chief maintenance officer (R)
Ruark, Clarence H., 1929, general foreman, steel car, East Chicago
Rumery, M. F., 1931, assistant terminal superintendent, Carteret
Sadtler, Philip B., 1944, chief engineer, evaporators

Sage, A., 1919, assistant to chief engineer, tank cars
Sass, Mabel I., 1918, assistant purchasing agent, freight and tank cars
Saxon, Steve, 1938, tool room superintendent, plastics, Milwaukee
Scanlin, J. Richard, sales representative, 1930
Schelp, J., 1939, general foreman, Aerocoach
Scholz, Carlton H., 1936, compression superintendent, plastics, Milwaukee
Schmidt, Frank C., 1928, car service agent
Schulz, E. E., 1920, treasurer
Seiple, Clarence, 1943, warehouse foreman, plate and welding, Sharon
Selig, Jerome S., 1930, vice-president
Selig, Lester N., 1914, vice-chairman
Sellers, James E., 1912, superintendent, South St. Joseph
Selonke, Arthur A., 1925, comptroller
Selz, Frank E., 1931, assistant to president
Sharpe, R. J., 1912, vice-president (R)
Shepherd, R. A., 1941, manager of contracts
Shoemaker, C. A., 1909, general superintendent (D)
Shotts, Robert B., 1926, foreman, shot blast, East Chicago
Siers, A. F., 1946, chief engineer, Aerocoach
Silverman, R. B., 1936, supervisor of purchases, Sharon
Simon, Theodore W., 1913, storekeeper, tank car division, Sharon
Simon, Z. R., 1915, tank car sales representative
Skyrm, Harold D., 1928, sales manager, plate and welding
Smelko, Robert, 1932, foreman, unionmelt welding, Sharon
Smeltzer, Ray P., 1923, foreman, No. 2 stores, East Chicago
Smith, Benjamin F., 1947, superintendent, East Chicago
Smith, B. R., 1925, chief engineer, plate and welding
Smith, Donald H., 1919, vice-president
Smith, Fruit, 1918, foreman, riggers, Sharon
Smith, Garland, 1923, manager, repair sales
Smith, L. H., 1940, chief engineer, Aerocoach division (R)
Smith, Paul L., 1936, employment manager, tank car, Sharon
Snow, Albert H., 1946, sales engineer, import dept., New York City
Snyder, Solomon J., 1929, chief piece work checker, East Chicago
Sop, Mike, 1943, foreman, weld shop, Sharon
Sprainis, J., 1946, shift foreman, injection, plastics, East Chicago
Spraul, J. Robert, 1947, assistant to director of research and testing laboratory, East Chicago
Stanczak, Edward L., 1935, statistician, U.R.T., Milwaukee

Staples, John W., 1924, sales manager, General American-Pfaudler
Stark, Merl G., 1922, production manager, East Chicago
Stebbins, Harry Y., 1935, assistant manager, precooling division
Stebler, Oliver J., 1947, assistant to superintendent, Sharon
Stebler, W. J., 1928, vice-president
Stewart Herman A., 1934, liaison engineer, Sharon
Stewart, Franklin S., 1904, plate shop superintendent, Sharon
Strack, Marvin, 1941, foreman, compression, plastics, Milwaukee
Stratton, M. M., 1928, chief inspector, Sharon
Strauss, Lewis L., 1933, director (R)
Sweeney, Dennis, 1942, foreman, machine shop, Sharon
Tally, V. C., 1935, car service agent, Buffalo (D)
Talmey, P., 1945, director, research and development
Tancibok, J., 1946, supervisory, injection, plastics, East Chicago
Taussig, W. M., 1917, sales representative (R)
Taylor, D. S., 1939, production engineer, Aerocoach
Tennis, T. E., 1916, new car sales
Tesseyman, John, 1921, manager, East Chicago (R)
Thompson, Charles L., 1931, assistant to vice-president
Thompson, Frank S., 1920, sales representative, Cleveland
Thompson, Harlan J., 1936, superintendent, precooling division
Thompson, J. C., 1945, assistant to chief engineer, plate and welding
Thompson, R. W., 1920, director of engineering
Tidswell, H. E., 1920, chief engineer, tank cars
Toops, Glynn H., 1945, assistant manager, plate and welding, Sharon
Topp, Martin J., 1944, compression and finishing supervisor, plastics, East Chicago
Tortorete, Anthony C., 1928, traffic manager, Sharon
Tryonas, Stanley C., 1921, storekeeper, East Chicago Plant No. 1
U'Halie, Nicholas G., 1936, plant engineer, Sharon
Urquhart, A. M., 1936, chief inspector of purchases, freight and tank cars
Valot, Merlin H., 1920, foreman, finishing, Sharon
Van Buskirk, Richard, 1947, production manager, East Chicago
Van Diemen, Walter F., 1939, injection superintendent, plastics, Milwaukee
Vogt, Max Gustav, 1933, superintendent, Milwaukee (SRL shop)
Vorhauer, J. C., 1915, vice-president and director of purchases
Wallace, John G., 1941, district manager, Orlando
Walter, Louis W., 1947, chief inspector, plastics, East Chicago

Walters, Clarence F., 1924, track foreman, steel car, East Chicago
Way, E. S., 1918, manager, East Chicago (R)
Weaver, Harrison M., 1920, yardmaster, East Chicago
Weaver, R. R., 1917, chief engineer (R)
Webb, John H., 1919, foreman, electrical, Sharon
Weiss, V. R., 1920, general purchasing agent*
Westfall, Howard, 1921, eastern manager, terminals
Whelan, Michael C., 1923, foreman, lumber yard, East Chicago
White, C. R., 1940, assistant secretary, Aerocoach
Wiesen, Arthur P., 1923, general foreman, machine shop, Sharon
Wilk, Frank, 1917, foreman, plate shop, Sharon
Williams, A. N., 1946, sales manager, plastics division
Williams, Charles, 1942, assistant to chief inspector, plate and welding, Sharon
Willis, P. J., 1915, assistant to purchasing agent
Wolfe, T. J. Francis, 1929, storekeeper, East Chicago
Woodward, W. J., 1912, treasurer (R)
Wormser, Leo F., 1930, general counsel
Wright, Andrew M., 1934, sales representative, Los Angeles
Wright, Robert, 1939, foreman, machine shop, Sharon
Young, Howard C., 1926, liaison engineer, East Chicago
Zeiser, John A., 1910, superintendent, St. Louis
Ziehl, Othon A., 1945, chief chemist, East Chicago
Zimmerman, G., 1946, chief electrician, plastics, East Chicago

Unclassified as to either date or title:

Cordon, T. J.; Dodge, Thomas A.; Fields, James Jr.; Foltz, E. C. Jr.; Fritz, Floyd (D); Geddes, W. E.; Hartman, Wm. (D); Havengar, Wm.; How, Harlan W.; Huber, W. J. (D); Jones, James; Knorr, W.; Lewis, H. G.; Lewis, H. T.; Michaelson, George (R); Parker, R. A.; Parsons, W. H.; Pearson, H. W.; Pierce, R. C.; Pote, E. C.; Powers, Thomas; Regh, N.; Schmitt, R. C.; Stadle, F. G.; Sweeny, John M.

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* In 1947 became president of the Duryea Corporation, a parts company affiliated with General American.

APPENDIX

The following tables contain the data on which all charts are based, and are numbered to correspond with the charts.

TABLE 1

FOUR MEASURES OF GROWTH, 1906–1946

	Total Assets	*Net Earnings*
1906	$ 300,000 *	$ 47,000
1916	7,953,030	1,000,000
1926	37,629,507	2,200,000
1936	102,563,216	3,000,000
1946	99,509,389	3,600,000
1947	131,802,265	6,982,180

	Gross Volume	*Cash Dividends*
1906	$ 86,810	$ 65,000
1916	6,296,715	117,950
1926	19,802,892	1,485,135
1936	38,696,064	2,162,406
1946	65,902,136	2,603,485
1947	94,887,355	3,218,637

* Estimated.

TABLE 2

GROSS INCOME FROM SERVICES AND MANUFACTURING

Year	*From Services*	*From Mfg. Incl. Own Equipment*	*From Mfg. Excl. Own Equipment* [*]
1924	$ 4,729,582.84	$22,411,433.96	$
1925	4,543,468.58	16,452,604.93	
1926	4,606,520.79	15,196,372.10	
1927	5,747,769.96	14,451,295.97	
1928	9,333,154.87	14,021,160.65	
1929	14,049,938.83	16,131,887.19	
1930	14,410,812.24	22,240,190.73	
1931	19,803,241.48	9,381,769.70	
1932	15,542,882.08	2,415,159.98	
1933	16,408,836.51	3,319,457.86	
1934	16,751,785.79	9,749,891.95	
1935	17,458,675.11	9,883,406.63	
1936	21,626,025.60	17,070,038.82	
1937	23,522,923.20	31,603,884.61	22,412,530.99
1938	23,220,128.91	9,649,207.22	3,870,052.19
1939	24,822,091.20	10,325,552.84	2,998,533.40
1940	27,503,363.49	25,251,320.15	15,892,309.81
1941	31,539,720.57	32,664,481.93	23,474,382.21
1942	44,692,142.53	40,432,571.12	31,673,583.81
1943	48,175,518.46	42,237,916.28	35,782,996.00
1944	44,408,240.68	51,913,456.14	44,291,317.88
1945	39,514,044.45	47,360,886.59	38,164,731.07
1946	36,379,837.85	38,919,013.60	29,522,299.13

[*] Beginning in 1937, published reports excluded own equipment manufacture from gross volume.

TABLE 3

NUMBER OF CARS OWNED
(as of end of year)

Year	*Tank Cars*	*Refrigerator And Other*	*Total Cars*
1903	37	94	131
1904	138	99	237
1905	164	88	252
1906	203	86	289
1907	360	73	433
1908	415	73	488
1909	511	68	579
1910	560	43	603
1911	811	36	847
1912	1,077		1,077
1913	1,303		1,303
1914	1,651		1,651
1915	2,328		2,328
1916	3,649		3,649
1917	4,331		4,331
1918	5,886		5,886
1919	8,319		8,319
1920	10,806		10,806
1921	10,887		10,887
1922	10,599		10,599
1923	10,779		10,779
1924	10,385	150	10,535
1925	10,247	415	10,662
1926	11,858	847	12,705
1927	14,916	1,090	16,006
1928	18,518	5,487	24,005
1929	22,076	10,318	32,394
1930	23,900	11,296	35,196
1931	24,101	17,910	42,011
1932	24,987	17,686	42,673
1933	24,755	17,562	42,317
1934	24,961	17,190	42,151
1935	37,547	17,206	54,753

TABLE 3—*Continued*

Year	*Tank Cars*	*Refrigerator And Other*	*Total Cars*
1936	37,265	16,471	53,736
1937	36,279	16,919	53,198
1938	37,116	17,038	54,154
1939	36,743	17,533	54,276
1940	36,122	18,823	54,945
1941	36,918	18,873	55,791
1942	37,759	18,785	56,544
1943	37,660	18,403	56,063
1944	37,505	17,964	55,469
1945	38,014	17,484	55,498
1946	37,342	17,105	54,447

TABLE 4

NET INCOME EARNED ON STOCKHOLDERS' CAPITAL

	Percentage Earned	
Year	*General American*	*47 Industrials*
1932	3.4	−0.5 (deficit)
1933	3.8	2.8
1934	4.3	3.9
1935	4.0	6.4
1936	5.2	9.7
1937	7.0	10.0
1938	4.5	4.2
1939	5.3	8.4

TABLE 5

GROSS VOLUME BY TYPES OF ACTIVITY

Activity	*1924*	*1937*	*1946*
Car Manufac. for Others (Includ. Repairs and Materials)	$20,954,660	$22,122,530	$15,191,468
Car Manufac. for Own Equipment (Incl. Repairs)	1,456,773	9,191,353	9,396,714
Motor Coaches and Parts			8,199,993
Plastics and Other *			2,984,697
Tank Car Rental	4,729,582	9,230,626	14,161,411
Refrg. and Other Rental		7,873,134	10,690,449
Storage Terminals		599,635	2,666,626

* Partly merchandising.

TABLE 6

TANK AND FREIGHT CARS PRODUCED, 1922–1947 *

(number of cars)

Year	*Tank*	*Box, Hopper, Refrigerator And Other*
1922	730	4,707
1923	1,603	9,279
1924	1,484	8,570
1925	1,440	5,577
1926	1,014	4,849
1927	3,199	3,519
1928	1,694	4,139
1929	2,267	3,619
1930	2,190	5,617
1931	227	2,530
1932	22	594
1933	85	13

TABLE 6—*Continued*

Year	*Tank*	*Box, Hopper, Refrigerator And Other*
1934	205	2,427
1935	127	2,402
1936	459	3,609
1937	1,052	6,523
1938	452	1,078
1939	485	1,355
1940	1,155	4,549
1941	1,637	6,619
1942	2,561	3,994
1943	1,576	5,749
1944	1,070	7,167
1945	863	3,725
1946	494	2,872
1947 *	1,300	8,000

TABLE 7

TOTAL NUMBER OF CARS PRODUCED: TANK, FREIGHT, AND OTHER, 1922–1947 *

1922	5,437	1935	2,529
1923	10,882	1936	4,068
1924	10,054	1937	7,575
1925	7,017	1938	1,530
1926	5,863	1939	1,840
1927	6,718	1940	5,704
1928	5,833	1941	8,256
1929	5,886	1942	6,555
1930	7,807	1943	7,325
1931	2,757	1944	8,237
1932	616	1945	4,588
1933	98	1946	3,366
1934	2,632	1947 *	9,300

* 1947 figures estimated on basis of first six months' output.

TABLE 8

TANK CAR SHIPMENTS FROM SHARON

Year	*New Cars Built*	*Cars Repaired*
1927	1,587	975
1928	1,694	2,147
1929	2,267	1,726
1930	2,090	1,582
1931	227	1,260
1932	22	832
1933	85	1,084
1934	205	1,741
1935	127	1,826
1936	459	2,444
1937	1,052	2,857
1938	452	1,505
1939	485	2,157
1940	1,155	2,105
1941	1,637	2,164
1942	2,561	1,870
1943	1,576	1,645
1944	1,070	1,527
1945	863	1,466
1946	494	1,896
1947 *	1,600	1,200

* 1947 annual figure estimated on basis of first nine months' shipments.

TABLE 9

FUNDED DEBT

Year	*Funded Debt*	*Interest Payments*
1903.......	$ -0-	$
1904.......	98,333.34	
1905.......	80,000.08	
1906.......	60,000.15	
1907.......	138,333.57	
1908.......	145,000.31	
1909.......	241,500.00	
1910.......	269,000.00	
1911.......	306,500.00	
1912.......	381,500.00	
1913.......	597,500.00	
1914.......	725,500.00	
1915.......	1,106,000.00	
1916.......	2,367,000.00	
1917.......	3,487,000.00	
1918.......	5,571,000.00	
1919.......	7,844,000.00	
1920.......	10,916,500.00	
1921.......	11,855,000.00	
1922.......	9,192,000.00	
1923.......	10,881,000.00	
1924.......	10,787,000.00	
1925.......	9,444,000.00	
1926.......	10,434,000.00	485,848.20
1927.......	16,729,150.00	556,630.68
1928.......	16,473,000.00	835,428.30
1929.......	14,475,000.00	768,762.50
1930.......	29,697,384.65	1,396,604.28
1931.......	41,659,693.11	1,790,461.27
1932.......	36,558,095.24	1,919,266.40
1933.......	31,577,487.33	1,669,757.88
1934.......	27,759,549.37	1,442,845.56
1935.......	32,484,989.37	1,251,087.50
1936.......	31,790,000.00	1,365,372.50
1937.......	32,575,000.00	1,186,254.17

TABLE 9—*Continued*

Year	*Funded Debt*	*Interest Payments*
1938.	$29,891,000.00	$1,158,315.00
1939.	29,005,000.00	1,059,107.23
1940.	29,300,388.80	1,006,564.72
1941.	28,768,569.55	777,456.39
1942.	27,652,118.20	740,437.50
1943.	21,998,803.00	642,936.28
1944.	17,909,500.00	485,737.95
1945.	15,537,141.40	393,842.66
1946.	13,930,668.75 *	322,462.50

* Excludes $2,600,000 ten-year loan contracted in 1946 for purchase of new Aerocoach property.

TABLE 10

EARNINGS BEFORE INTEREST * COMPARED WITH INTEREST REQUIREMENTS

Year	*Earnings Before Interest and Taxes* *000 omitted*	*Interest Requirements*
1927.	$3,933	$ 556,630.68
1928.	5,323	835,428.30
1929.	6,918	768,762.50
1930.	7,193	1,396,604.28
1931.	6,016	1,790,461.27
1932.	4,434	1,919,266.40
1933.	3,770	1,669,757.88
1934.	3,769	1,442,845.56
1935.	4,150	1,251,087.50
1936.	4,984	1,365,372.50
1937.	5,383	1,186,254.17
1938.	5,398	1,158,315.00
1939.	5,437	1,059,107.23
1940.	6,679	1,006,564.72
1941.	8,498	777,456.39
1942.	10,829	740,437.50
1943.	12,166	642,936.28
1944.	11,052	485,737.95
1945.	8,589	393,842.66

*Based on three-year moving average.

TABLE 11

NET INCOME EARNED ON STOCKHOLDERS' CAPITAL

For basic data underlying Chart 11, see the annual reports of the several corporations.

TABLE 12

PLANT INVESTMENT, 1907–1946

Year	*Cost*	*Reserve*	*Net*
EAST CHICAGO			
1907............	$ 4,440.66	$ 0	$ 4,440.66
1910............	26,362.51	0	26,362.51
1913............	55,067.66	5,597.74	49,469.92
1916............	144,873.04	18,195.60	126,677.44
1924............	7,058,420.67	1,031,149.96	6,027,270.71
1932............	7,509,668.94	3,182,849.25	4,326,819.69
1937............	8,824,748.01	4,572,842.34	4,251,905.67
1945............	9,559,417.61	7,037,461.59	2,521,956.02
1946............	9,428,311.42	6,569,810.61	2,858,500.81
WARREN			
1907............	$ 6,914.77	$ 0	$ 6,914.77
1910............	19,103.57	1,910.35	17,193.22
1913............	29,518.64	5,054.62	24,464.02
1916............	69,690.61	19,471.96	50,218.65
1924............	203,433.46	18,640.03	184,793.43
SHARON			
1927............	$1,639,158.28	$ 809,506.68	$ 829,651.60
1932............	1,778,165.44	1,055,356.00	722,809.44
1937............	1,772,989.35	1,209,043.37	563,945.98
1945............	4,002,955.70	2,522,126.25	1,480,829.45
1946............	5,119,044.80	2,657,496.72	2,461,548.08

TABLE 13

CONSOLIDATED BALANCE SHEET AS OF DECEMBER 31

(thousands of dollars)

ASSETS

Year	*Cash*	*Receivables*	*Inventories*	*Rolling Stock*	*Plant and Equipment*	*Other Assets*	*Total Assets*
1920.......	$1,503	$6,456	$5,034	$15,657	$6,212	$1,277	$36,239
1921.......	1,314	5,698	1,736	15,154	5,373	786	30,061
1922.......	1,629	7,438	5,615	14,325	5,466	1,008	35,481
1923.......	1,918	7,367	8,142	15,344	6,469	865	40,105
1924.......	1,525	8,065	3,367	14,392	6,250	1,271	34,870
1925.......	2,561	7,437	2,160	16,525	5,925	1,395	36,003
1926.......	1,993	6,405	2,386	19,573	6,002	1,271	37,630
1927.......	3,319	7,127	2,552	26,233	6,084	1,461	46,776
1928.......	2,639	5,798	1,649	29,753	6,194	10,361	56,394
1929.......	2,183	7,674	3,737	32,281	6,100	16,663	68,638
1930.......	4,247	3,854	1,390	59,508	8,076	12,942	90,017
1931.......	3,310	7,678	1,027	72,059	7,855	8,572	100,501
1932.......	2,511	6,377	865	69,106	7,450	7,388	93,697
1933.......	2,307	5,804	1,042	65,671	7,180	7,733	89,737
1934.......	3,286	5,407	1,273	63,263	7,101	7,418	87,748
1935.......	4,674	5,235	1,358	72,409	7,623	5,011	96,310
1936.......	7,235	5,832	3,860	71,425	7,635	6,576	102,563
1937.......	6,866	5,934	4,653	72,563	8,589	5,558	104,163

1938.......	5,563	3,960	1,728	74,029	10,248	5,173	100,701
1939.......	4,755	3,891	4,798	70,474	8,387	3,571	95,876
1940.......	3,610	6,155	4,961	71,636	8,810	2,966	98,138
1941.......	2,713	4,459	10,860	71,272	10,340	2,530	102,174
1942.......	6,101	6,197	7,887	65,193	11,845	2,268	99,491
1943.......	10,204	7,931	10,012	54,954	11,354	3,751	98,206
1944.......	8,546	11,422	8,952	49,687	11,292	9,553	99,452
1945.......	8,405	6,321	8,419	45,079	11,098	14,591	93,913
1946.......	8,775	8,046	20,554	43,114	15,295	3,725	99,509
1947*......	4,201	8,548	29,873	44,000**	17,244**	8,943	112,809

* June 30, 1947

** Estimate

TABLE 13—*Continued*

CONSOLIDATED BALANCE SHEET AS OF DECEMBER 31

(thousands of dollars)

LIABILITIES

Year	*Accounts Payable*	*Notes Payable and Funded Debt*	*Other Liabilities*	*Miscellaneous Reserves*	*Preferred Stock*	*Common Stock and Surplus*	*Total Liabilities*
1920.......	$3,025	$15,367	$ 841	$1,382	$5,031	$10,493	$ 36,239
1921.......	720	11,855	762	484	4,871	11,359	30,061
1922.......	1,569	12,092	1,184	1,129	8,844	10,663	35,481
1923.......	2,974	14,632	972	1,376	9,193	10,958	40,105
1924.......	1,638	10,787	818	1,377	8,843	11,407	34,870
1925.......	1,665	9,444	793	1,514	8,320	14,267	36,003
1926.......	1,891	10,434	827	1,536	8,104	14,838	37,630
1927.......	1,222	16,729	810	1,379	7,753	18,883	46,776
1928.......	1,304	16,473	924	1,360	——	36,333	56,394
1929.......	2,376	14,475	1,142	1,523	——	49,122	68,638
1930.......	2,087	29,697	1,575	1,949	1,901	52,808	90,017
1931.......	1,276	46,160	1,991	1,544	1,877	47,653	100,501
1932.......	598	40,048	1,302	1,549	1,843	48,357	93,697
1933.......	706	32,877	1,332	1,458	1,793	51,571	89,737
1934.......	1,019	27,760	1,718	1,532	1,727	53,992	87,748
1935.......	1,828	35,179	1,720	2,247	——	55,336	96,310

1936.......	2,620	31,951	2,848	1,380	——	63,764	102,563
1937.......	2,954	32,705	1,894	1,551	——	65,059	104,163
1938.......	1,268	30,232	1,879	1,167	——	66,155	100,701
1939.......	3,494	29,005	1,511	1,190	——	60,676	95,876
1940.......	3,213	29,300	2,018	1,786	——	61,821	98,138
1941.......	4,808	28,769	4,400	1,121	——	63,076	102,174
1942.......	4,582	27,652	1,467	1,391	——	64,399	99,491
1943.......	6,609	21,999	1,534	2,028	——	66,036	98,206
1944.......	7,702	21,929	2,154	1,057	——	66,610	99,452
1945.......	7,561	16,910	2,051	881	——	66,510	93,913
1946.......	10,779	16,531	3,795	899	——	67,505	99,509
1947*......	12,608	23,365	5,821	1,218	——	69,797	112,809

* June 30, 1947.

TABLE 14

EQUIPMENT TRUST CERTIFICATES AND NOTES SOLD THROUGH KUHN, LOEB & COMPANY, 1931–1947

	Dated	*Amount in Thousands*	Rate	Maturity
Gen'l Amer. Tank Car Co.				
Equipment Trust Ctf. Series 25	1934	$ 792	4½%	1935–1944
Equipment Trust Ctf. Series 26	1935	1,500	4%	1936–1945
Equipment Trust Ctf. Series 27	1935	6,500	4%	1936–1945
Gen'l Amer. Transportation System				
Equipment Trust Ctf. Series A	1931	9,690	4½%	1932–1946
10-Yr. Notes *	1931	5,340	5%	1941
Gen'l American Transportation Corp.				
Serial Notes	1936	19,250	3%	1937–1942
Equipment Trust Ctf. Series 28	1937	3,000	2½%	1938–1952
Equipment Trust Ctf. Series 29	1937	3,900	3%	1937–1952
Equipment Trust Ctf. Series 30	1939	3,900	2¾%	1939–1954
Serial Notes	1939	7,000	1% to 1/1/40 2% thereafter	1940–1945

* These notes were purchased from Swift & Co. and in consideration of payment of $400,000, General American agreed not to exercise its right of redemption.

Equipment Trust Ctf.	Series 31	1940	5,250	2%	1940–1950
Serial Notes		1941	3,498	2%	1946–1948
Equipment Trust Ctf.	Series 33	1941	3,440	2%	1942–1951
Equipment Trust Ctf.	Series 35	1942	3,000	2½%	1942–1952
Equipment Trust Ctf.	Series 39	1945	1,540	1¼%	1945–1952
Equipment Trust Ctf.	Series 41	1946	2,800	1¾%	1947–1953
			5,200	2¾%	1954–1966
Equipment Trust Ctf.	Series 42	1947	3,506	1¾%	1947–1954
			6,630	2¾%	1954–1967

TABLE 15

EQUIPMENT TRUST ISSUES OUTSTANDING ON JUNE 30, 1947

Series	*Date of Issue*	*Rate*	*Amount Outstanding*
28	1937	2½	$ 1,000,000.00
30	1939	2¾	1,820,000.00
31	1940	2	1,575,000.00
33	1941	2	1,548,000.00
34	1941	2	207,000.00
35	1942	2½	400,000.00
36	1942	2½	150,000.00
37	1943	2	312,000.00
38	1944	2	165,000.00
39	1945	1¾	1,100,000.00
40	1945	1¾	952,000.00
41	1946	1¾	2,600,000.00
41	1946	2¾	5,200,000.00
			$17,029,000.00

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